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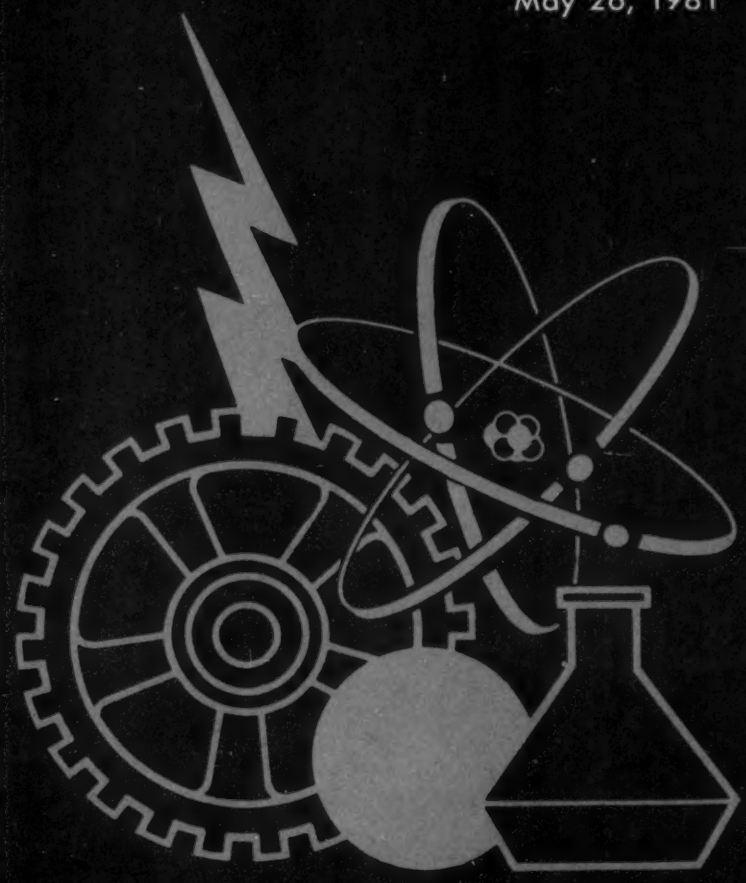
PATENTS

May 26, 1981



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May 26, 1981 Volume 1006 Number 4

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT, consult Chapter 1800 of the Manual of Patent Examining Procedure and notices 90–95 in the consolidated listing of notices appearing in the Official Gazette of Jan. 6, 1981.

The PCT fees in effect after May 19, 1981 are as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Basic Fee (for the first 30 sheets of an international application)	215.00
Basic Supplemental Fee (for each sheet over 30)	4.00
International Designation Fee (for each State for which a national patent is sought, or group of States for which the same regional patent is sought)	50.00

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

REISSUE APPLICATION FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,933,781, Re. S.N. 044,626, Filed June 1, 1979, Cl. 125/260, PROCESS FOR THE PREPARATION OF ALPHA-L-ASPARTYL-L-PHENYLALANINE ALKYL ESTERS, Gerald L. Bachman, et al., Owner of Record: *Monsanto Co., St. Louis, Mo.,* Attorney or Agent: R. E. Wexler, Ex. Gp.: 125

PATENT NOTICES

Certificates of Correction for the Week of May 26, 1981

Re. 30,429	4,229,476	4,246,113	4,251,712
Re. 30,456	4,229,520	4,246,131	4,251,757
Re. 30,508	4,231,529	4,246,197	4,251,865
D. 254,541	4,233,029	4,246,292	4,251,870
D. 257,389	4,233,296	4,246,363	4,251,953
3,566,639	4,233,337	4,246,587	4,252,033
3,780,300	4,233,406	4,247,057	4,252,064
3,874,712	4,234,176	4,247,259	4,252,082
3,882,112	4,234,307	4,247,326	4,252,092
4,058,564	4,234,475	4,247,805	4,252,158
4,091,895	4,234,603	4,247,900	4,252,173
4,125,407	4,235,276	4,248,000	4,252,204
4,130,663	4,235,545	4,248,034	4,252,290
4,139,545	4,236,772	4,248,037	4,252,395
4,152,426	4,237,318	4,248,055	4,252,456
4,173,149	4,237,765	4,248,151	4,252,587
4,177,601	4,238,957	4,248,242	4,252,747
4,184,380	4,239,663	4,248,410	4,252,876
4,186,211	4,239,848	4,248,535	4,252,895
4,193,071	4,239,897	4,248,538	4,253,462
4,195,160	4,240,250	4,248,633	4,254,045
4,197,809	4,240,439	4,248,745	4,254,052
4,198,126	4,240,723	4,248,825	4,254,207
4,199,804	4,240,792	4,248,918	4,254,282
4,209,087	4,241,071	4,249,016	4,254,549
4,212,981	4,241,481	4,249,270	4,254,670
4,213,849	4,241,545	4,249,409	4,254,879
4,215,222	4,242,379	4,249,495	4,254,906
4,216,796	4,242,779	4,249,534	4,254,920
4,217,583	4,243,000	4,249,747	4,255,037
4,218,531	4,243,078	4,249,881	4,255,052
4,219,922	4,244,032	4,250,057	4,255,209
4,221,031	4,244,336	4,250,107	4,255,214
4,221,058	4,244,497	4,250,133	4,255,250
4,221,128	4,244,698	4,250,345	4,255,523
4,223,404	4,244,949	4,250,928	4,255,614
4,224,848	4,244,976	4,251,055	4,255,618
4,226,167	4,244,994	4,251,187	4,255,747
4,226,269	4,245,009	4,251,206	4,255,758
4,228,919	4,245,041	4,251,247	4,256,234
4,228,938	4,245,102	4,251,336	4,256,241
4,228,984	4,245,231	4,251,463	4,256,257

Disclaimers

3,407,741.—*Robert L. Weber,* Lacon and *Noel D. Wiggins,* Chillicothe, Ill. COMPACT OIL PUMP FOR INTERNAL COMBUSTION ENGINES. Patent dated Oct. 29, 1968. Disclaimer filed Mar. 11, 1981, by the assignee, *Caterpillar Tractor Co.*

Hereby enters this disclaimer to claims 1, 2, 3 and 8 of said patent.

3,898,088.—*Hyman L. Cohen; Frederick Koeng* and *I. Ponticello,* Rochester, N.Y. PHOTOGRAPHIC ELEMENTS CONTAINING POLYMERIC MORDANTS. Patent dated Aug. 5, 1975. Disclaimer filed Mar. 18, 1981, by the assignee, *Eastman Kodak Co.*

Hereby enters this disclaimer to all claims of said patent.

3,944,424.—*Hyman L. Cohen; Frederick Koeng* and *Ignazio Ponticello,* Rochester, N.Y. PHOTOGRAPHIC OR IMAGE RECEIVING ELEMENTS CONTAINING POLYMERIC MORDANTS. Patent dated Mar. 16, 1976. Disclaimer filed Mar. 18, 1981, by the assignee, *Eastman Kodak Co.*

Hereby enters this disclaimer to all claims of said patent.

4,114,897.—*Dean R. Bainard,* Bethel Township, York County, S.C. METHOD FOR INSTALLING SEAL OVER SPLINED SHAFT. Patent dated Sept. 19, 1978. Disclaimer filed Feb. 23, 1981, by the assignee, *Garlock Inc.*

Hereby enters this disclaimer to claim 9 of said patent.

4,177,421.—*David D. Thornvurg,* Los Altos, Calif. CAPACITIVE TRANSDUCER. Patent dated Dec. 4, 1979. Disclaimer filed Mar. 30, 1981, by the assignee, *Xerox Corp.*

Hereby enters this disclaimer to claims 1, 2, 3, 6, 7, 8, 9, 10, 11, 12 and 16 of said patent.

4,212,457.—*Joachim Guenther,* Webster, N.Y. PRE/POST-COLLATION COPYING SYSTEM. Patent dated July 15, 1980. Disclaimer filed Mar. 30, 1981, by the assignee, *Xerox Corp.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

4,222,987.—*David P. Keller,* Morrisville, Pa. MUFFLE CALCINER HAVING COUNTER-ROTATING SCREW CONVEYORS. Patent dated Sept. 16, 1980. Disclaimer filed Mar. 30, 1981, by the assignee, *Columbian Chemicals Co.*

The term of the patent subsequent to Mar. 17, 1981, has been disclaimed.

4,244,823.—*Francis Henry Wessel;* North Bend, *Matthew F. Kluesener;* Cincinnati and *Donald Lee Hurley* and *Joseph Bernard Bange;* Hamilton, Ohio. CENTRIFUGAL BASKET VALVE MECHANISM. Patent dated Jan. 13, 1981. Disclaimer filed Mar. 16, 1981, by the assignee, *The Western States Machine Co.*

Hereby enters this disclaimer to claims 1, 3 and 4 of said patent.

Dedication

Re. 27,172.—*Andrew J. Van Noord,* Grand Rapids, Mich. REMOTE CONTROL MIRROR. Patent dated Sept. 20, 1971. Dedication filed Dec. 29, 1980, by the inventor.

Hereby dedicates to the Public the entire term of said patent.

Disclaimers and Dedications

4,183,872.—*John T. Carlock,* Ponca City, Okla. POLYMER BOUND(PENTAHAPTOCYCLOPENTADIENYL)-BISCARBONYL RHODIUM HYDROFORMYLATION CATALYST. Patent dated Jan. 15, 1980. Disclaimer and dedication filed Mar. 9, 1981, by the assignee, *Conoco Inc.*

Hereby disclaims and dedicates to the Public the entire remaining term of said patent.

4,214,109.—*John T. Carlock,* Ponca City, Okla. POLYMER BOUND(PENTAHAPTOCYCLOPENTADIENYL)BISCARBONYL RHODIUM HYDROFORMYLATION CATALYST. Patent dated July 22, 1980. Disclaimer and dedication filed Mar. 9, 1981, by the assignee, *Conoco Inc.*

Hereby disclaims and dedicates to the Public the entire remaining term of said patent.

National Technical Information Services

U.S. GOVERNMENT-OWNED INVENTIONS

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The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

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Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for theagency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE ARMY/OTJAG

Chief, Intellectual Property Division
Room 2D 444, Pentagon
Washington, D.C. 20310

Patent application 6–149,205. Erosion Lithography to Abrade a Pattern Onto a Substrate. Filed May 12, 1980.

Patent 4,174,162. Aerial Camera Mounting Means. Filed July 7, 1978. Patented Nov. 13, 1979. Not available NTIS.

Patent 4,188,908. Novel Microscope Slide Smoker. Filed Jan. 15, 1979. Patented Feb. 19, 1980. Not available NTIS.

Patent 4,191,087. Rocket Detent and Release Mechanism. Filed Aug. 14, 1978. Patented Mar. 4, 1980. Not available NTIS.

Patent 4,191,088. Ammunition Feeder Having Two Feed Pawls. Filed Apr. 10, 1978. Patented Mar. 4, 1980. Not available NTIS.

Patent 4,191,886. Radiation Dose Rate Indicator. Filed July 31, 1978. Patented Mar. 4, 1980. Not available NTIS.

Patent 4,191,959. Microstrip Antenna with Circular Polarization. Filed July 17, 1978. Patented Mar. 4, 1980. Not available NTIS.

Patent 4,192,349. Air Conditioning Valve. Filed Aug. 7, 1978. Patented Mar. 11, 1980. Not available NTIS.

Patent 4,193,286. Vehicle Control Arm Spreader Tool. Filed May 18, 1978. Patented Mar. 18, 1980. Not available NTIS.

Patent 4,194,187. Analog-to-Digital Conversion by Charge Coupled Device. Filed Aug. 7, 1978. Patented Mar. 18, 1980. Not available NTIS.

Patent 4,194,304. Loader and Recoil Simulation Trainer for Artillery Crews. Filed Nov. 2, 1978. Patented Mar. 25, 1980. Not available NTIS.

Patent 4,194,431. Active Armor. Filed July 5, 1966. Patented Mar. 25, 1980. Not available NTIS.

Patent 4,194,643. Method and Apparatus for Frit-Sealing High Temperature CRT Faceplate to Conventional CRT Envelope. Filed Dec. 19, 1978. Patented Mar. 25, 1980. Not available NTIS.

Patent 4,194,929. Technique for Passivating Stainless Steel. Filed Sept. 8, 1978. Patented Mar. 25, 1980. Not available NTIS.

Patent 4,195,144. Copolymers of Alpha-N-Alkylsytrenes and Styrene. Filed Oct. 19, 1978. Patented Mar. 25, 1980. Not available NTIS.

Patent 4,195,195. Tape Automated Bonding Test Board. Filed Sept. 28, 1978. Patented Mar. 25, 1980. Not available NTIS.

Patent 4,195,525. Sampling Valve. Filed Mar. 23, 1979. Patented Apr. 1, 1980. Not available NTIS.

Patent 4,195,745. Thermally Sensitive Pressure Release Assembly for Sealed Pressurized Vessel. Filed Feb. 13, 1978. Patented Apr. 1, 1980. Not available NTIS.

Patent 4,197,360. Multilayer Laminate of Improved Resistance to Fatigue Cracking. Filed May 1, 1978. Patented Apr. 8, 1980. Not available NTIS.

Patent 4,197,547. High Frequency Aircraft Wire Antenna. Filed June 26, 1978. Patented Apr. 8, 1980. Not available NTIS.

Patent 4,198,017. Control Augmentation System for Flight Vehicles. Filed Oct. 13, 1978. Patented Apr. 15, 1980. Not available NTIS.

Patent 4,198,767. Recording System for Laser Weapon Simulator. Filed July 3, 1978. Patented Apr. 22, 1980. Not available NTIS.

Patent 4,199,760. Method for Measuring Range to a Rocket in Flight Employing a Passive Ground Tracker Station. Filed Sept. 15, 1978. Patented Apr. 22, 1980. Not available NTIS.

Patent 4,199,762. Pedestal and Gimbal Assembly. Filed May 18, 1977. Patented Apr. 22, 1980. Not available NTIS.

Patent 4,200,028. Multi-Purpose Gun Safety. Filed Aug. 18, 1978. Patented Apr. 29, 1980. Not available NTIS.

Patent 4,201,612. Bonding Plastic Layers. Filed May 15, 1978. Patented May 6, 1980. Not available NTIS.

Patent 4,207,434. Integral Electric Generator, Multiplexer, Data Acquisition System. Filed Apr. 17, 1978. Patented June 10, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP
1900 Half St., S.W.
Washington, D.C. 20234

Patent application 6–150,323. Laser Stimulated Raman Molecular Beam Time and Frequency Standard. Filed May 16, 1980.

Patent application 6–175,793. Method for Testing and Analyzing Surface Acoustic Wave Interdigital Transducers. Filed Aug. 6, 1980.

Patent application 6–175,794. Compensated Temperature Sensing Device. Filed Aug. 6, 1980.

Patent application 6–175,795. Adaptive Interference Tracker for Suppression of Narrow Band Interference. Filed Aug. 6, 1980.

Patent application 6–176,434. Simultaneous Signal Detector for an Instantaneous Frequency Measurement Receiver. Filed Aug. 8, 1980.

Patent application 6–176,435. Self-Calibrating Interferometer. Filed Aug. 8, 1980.

Patent application 6–176,436. Fiber Optic Switching Device. Filed Aug. 8, 1980.

Patent application 6–176,437. Survival Target Acquisition and Designation System. Filed Aug. 8, 1980.

Patent application 6–177,335. Air Assist Apparatus for Gas Turbomachine Augmentor Sprayring. Filed Aug. 12, 1980.

Patent application 6–178,042. Continuous Force Actuator. Filed Aug. 14, 1980.

Patent application 6–200,226. Scan Corrected Vidicon Camera Apparatus. Filed Oct. 23, 1980.

Patent application 6–200,283. Data Bus System Utilizing

FM Communication Techniques. Filed Oct. 24, 1980.

Patent application 6-201,583. Frequency Shift Keying Data Bus Communication System. Filed Oct. 29, 1980.

Patent application 6-201,854. Modified Pulse Width Modulation Data Bus Communication System. Filed Oct. 29, 1980.

Patent 4,231,248. Laser Tensile Test Sample Holder. Filed June 15, 1979. Patented Nov. 4, 1980. Not available NTIS.

Patent 4,231,293. Submissile Disposal System. Filed Oct. 26, 1977. Patented Nov. 4, 1980. Not available NTIS.

Patent 4,231,533. Static Self-Contained Laser Seeker System for Active Missile Guidance. Filed July 9, 1975. Patented Nov. 4, 1980. Not available NTIS.

Patent 4,231,534. Active Optical Tracking System. Filed Nov. 4, 1977. Patented Nov. 4, 1980. Not available NTIS.

Patent 4,232,221. Method and Apparatus for Trimming IR/CCD Mosaic Sensors. Filed Jan. 22, 1979. Patented Nov. 4, 1980. Not available NTIS.

Patent 4,232,278. High Power Microwave Integrated Circuit Receiver Protector with Integral Sensitivity Time Control. Filed July 6, 1979. Patented Nov. 4, 1980. Not available NTIS.

Patent 4,232,446. Gage for Measuring Decrease in Dimension of Test Specimen in Tensile Test. Filed Mar. 30, 1979. Patented Nov. 11, 1980. Not available NTIS.

Patent 4,232,996. Light Weight Fan Assembly. Filed Oct. 6, 1978. Patented Nov. 11, 1980. Not available NTIS.

Patent 4,233,103. High Temperature-Resistant Conductive Adhesive and Method Employing Same. Filed Dec. 20, 1978. Patented Nov. 11, 1980. Not available NTIS.

Patent 4,233,426. Channel Sealant Compositions. Filed Apr. 4, 1979. Patented Nov. 11, 1980. Not available NTIS.

Patent 4,234,144. Base Vent Assembly for Entry Space Vehicles. Filed Oct. 24, 1978. Patented Nov. 18, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY

Director, Navy Patent Program/
Patent Council for the Navy
Office of Naval Research
Code 302
Arlington, Va. 22217

Patent application 6-144,811. Automatic Exposure Control for Pulsed Active TV Systems. Filed May 7, 1980.

Patent 4,189,701. Hydroacoustic Detection System. Filed Mar. 9, 1971. Patented Feb. 19, 1980. Not available NTIS.

Patent 4,219,045. Sea Water Pressure Regulator Valve. Filed Dec. 22, 1978. Patented Aug. 26, 1980. Not available NTIS.

Patent 4,219,885. Sonar Target Simulator. Filed Sept. 8, 1964. Patented Aug. 26, 1980. Not available NTIS.

Patent 4,220,411. Fiber Optic Light Launching Assembly. Filed Aug. 14, 1978. Patented Sept. 2, 1980. Not available NTIS.

Patent 4,220,952. Random FM Autocorrelation Fuze System. Filed Feb. 17, 1956. Patented Sept. 2, 1980. Not available NTIS.

Patent 4,222,051. Cascaded Digital Cancelers. Filed Jan. 18, 1979. Patented Sept. 9, 1980. Not available NTIS.

Patent 4,222,118. Intelligent Automatic Gain Control Circuit. Filed July 31, 1978. Patented Sept. 9, 1980. Not available NTIS.

Patent 4,223,123. Aliphatic Phenoxy Polyphthalocyanine. Filed May 29, 1979. Patented Sept. 16, 1980. Not available NTIS.

Patent 4,223,400. Low-Frequency Directional Hydrophone. Filed Sept. 28, 1978. Patented Sept. 16, 1980. Not available NTIS.

Patent 4,223,428. Method and Apparatus for Securing a Ferroelectric Stack to a Weighted Projection Surface. Filed July 2, 1973. Patented Sept. 23, 1980. Not available NTIS.

Patent 4,225,239. Magneto-Optic Bias of Ring Laser Using Reflective Magneto-Optic Element at Near-Grazing Incidence. Filed July 5, 1979. Patented Sept. 30, 1980. Not available NTIS.

Patent 4,225,831. CW Scalable Donor-Acceptor Gas Transfer Laser. Filed Aug. 10, 1978. Patented Sept. 30, 1980. Not available NTIS.

Patent 4,226,649. Method for Epitaxial Growth of GaAs Films and Devices Configuration Independent of GaAs Substrate Utilizing Molecular Beam Epitaxy and Substrate Removal Techniques. Filed Sept. 11, 1979. Patented Oct. 7, 1980. Not available NTIS.

Patent 4,226,801. Terminated Bis(3,4-Dicyanophenoxy) Alkanes. Filed June 25, 1979. Patented Oct. 7, 1980. Not available NTIS.

Patent 4,227,170. Current-Reducing Device. Filed June 22, 1977. Patented Oct. 7, 1980. Not available NTIS.

Patent 4,228,437. Wideband Polarization-Transforming Electromagnetic Mirror. Filed June 26, 1979. Patented Oct. 14, 1980. Not available NTIS.

Patent 4,229,812. Apparatus for Securing a Ferroelectric Stack to a Weighted Projection Surface. Filed Nov. 24, 1971. Patented Oct. 21, 1980. Not available NTIS.

Patent 4,231,103. Fast Fourier Transform Spectral Analysis System Employing Adaptive Window. Filed Feb. 12, 1979. Patented Oct. 28, 1980. Not available NTIS.

Patent 4,231,891. Solid Compositions for Generation of Gases Containing a High Percentage of Hydrogen or Its Isotopes. Filed June 16, 1978. Patented Nov. 4, 1980. Not available NTIS.

Patent 4,234,142. High Angle-of-Attack Missile Control System for Aerodynamically Controlled Missiles. Filed June 8, 1978. Patented Nov. 18, 1980. Not available NTIS.

Patent 4,234,852. Coherent Frequency Shift Key Demodulator. Filed Nov. 15, 1978. Patented Nov. 18, 1980. Not available NTIS.

Patent 4,236,546. Electronic Breathing Mixture Control. Filed Oct. 23, 1978. Patented Dec. 2, 1980. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters
NASA Code GP-4
Washington, D.C. 20546

Patent application 6-182,880. Modified Spiral Wound Retaining Ring. Filed Aug. 29, 1980.

Patent application 6-195,226. Beam Connector Apparatus and Assembly. Filed Oct. 8, 1980.

Patent 4,217,633. Solar Cell System Having Alternating Current Output. Filed Aug. 10, 1979. Patented Aug. 12, 1980. Not available NTIS.

Errata

"All reference to Patent No. D. 258,989 to Frank R. Wilkerson of Oklahoma for DENTAL DELIVERY TRAY appearing in the Official Gazette of Apr. 21, 1981 should be deleted since no patent was granted."

"All reference to Patent No. 4,258,932 to Thomas S. Moore and Terrence Smith both of Michigan for FABRICATED LOAD SUPPORT STRUCTURAL MEMBER appearing in the Official Gazette of Mar. 31, 1981 should be deleted since no patent was granted."

"All reference to patent No, 4,260,133 to Earl Clayton Thompson, Morris C. Keller and Francis Rustin of Texas and Missouri for ANIMAL WATERING VALVE WITH PROTECTED BIASING SPRING appearing in the Official Gazette of Apr. 7, 1981 should be deleted since no patent was granted."

"All reference to Patent No. 4,262,308 to Walter G. Gibson of New Jersey for SIGNAL SEPARATION NETWORKS appearing in the Official Gazette of Apr. 14, 1981 should be deleted since no patent was granted."

"All reference to Patent No. 4,265,392 to Samuel C. K. Saw of Australia for REINFORCED CONTAINER appearing in the Official Gazette of May 5, 1981 should be deleted since no patent was granted."

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
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	Sacramento: California State Library	(916) 323-4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
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Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
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New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
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	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF Mar. 21, 1981

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	2-07-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-11-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	10-22-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	2-01-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-01-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—VACANT ..... Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	7-10-79
SPECIAL LAWS ADMINISTRATION, GROUP 220—VACANT ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	9-05-79
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-14-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	7-09-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-21-78
DESIGN, GROUP 290—C. D. QUARFORTH, Director ..... Industrial Arts; Household, Personal and Fine Arts.	2-12-79
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-29-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	11-01-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	9-18-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	7-27-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during Feb. 1981, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,122,749 to 3,127,613, inclusive

Plant Patents ..... Numbers 2,368 to 2,388, inclusive

REISSUES

MAY 26, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,621

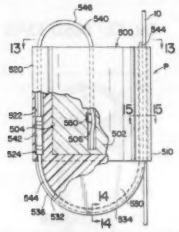
CARRIER FOR EXPLOSIVE PRIMER AND METHOD OF USING SAME

Brooke J. Calder, Jr., Aurora, Ohio; David L. Childs, Madisonville, Ky.; Roger N. Prescott, Lyndhurst, Ohio, and Donald W. Lyons, Madisonville, Ky., assignors to Austin Powder Company, Beachwood, Ohio

Original No. 4,141,296, dated Feb. 27, 1979, Ser. No. 740,799, Nov. 11, 1976. Application for reissue Apr. 16, 1980, Ser. No. 140,744

Int. Cl.[3] **F42B** *3/10*

U.S. Cl. 102—313 **27 Claims**



27. A carrier for supporting a primer and for guiding said primer along a detonating cord extending into a borehole from the open, charging end thereof and into a location with said primer in detonating relationship with a charge of explosive material spaced from said charging end of said borehole, said charge being generally immune from detonation by said detonating cord and detonatable by said primer, said carrier including: means for holding said primer spaced from said detonating cord a distance preventing said cord from detonating said primer directly; means for slidably securing said carrier with respect to said detonating cord whereby said carrier can move freely and longitudinally along said cord; means on said carrier for supporting an elongated time delay detonation element having an input portion and extending in a generally linear path from said extending detonating cord to said primer; said element supporting means including positional control means external of said primer for holding said input portion in a predetermined relationship with respect to said detonating cord as said carrier slides along said detonating cord.

Re. 30,622

FUEL METERING APPARATUS FOR A CARBURETOR

Jose F. Regueiro, Waterloo, Iowa, assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Original No. 4,007,721, dated Feb. 15, 1977, Ser. No. 471,345, May 17, 1974. Application for reissue Apr. 17, 1978. Ser. No. 897,659

Int. Cl.[3] **F02M** *17/18*

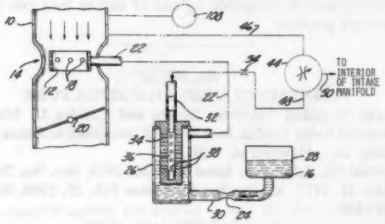
U.S. Cl. 123—523 **13 Claims**

1. In combination: an internal combustion engine having an intake manifold, an air induction pipe, a venturi throat disposed within said air induction pipe, a fuel reservoir, a fuel nozzle means connecting said fuel reservoir and said fuel nozzle means including an emulsifying well disposed intermediate said fuel reservoir and said fuel nozzle means, said fuel nozzle means disposed in said venturi throat for introducing fuel into a stream of air flowing through said air induction pipe,

said emulsifying well including a passage means for directing air into the fuel whereby the fuel delivered to said venturi throat is mixed with air.

means in communication with the interior of said intake manifold for sensing the pressure therein; and

valve means connected intermediate said air induction pipe, upstream of said fuel nozzle means, and said emulsifying well, said valve means being connected to and responsive to said manifold pressure sensing means to regulate air flow through an outlet to said emulsifying well to decrease the amount of air introduced into said fuel upon a predetermined increase in the pressure in said intake mani-



fold and to increase the amount of air introduced into said fuel upon a predetermined decrease in the pressure in said intake manifold whereby a predetermined optimum air/fuel mixture is provided for said internal combustion engine over a wide range of engine speeds and loads said valve means comprising a tubular member having apertures therein connecting the interior thereof in the area adjacent said manifold pressure sensing means to said outlet.

Re. 30,623

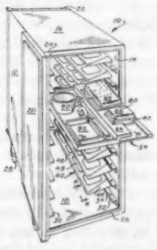
APPARATUS FOR SELECTIVELY HEATING AN INDIVIDUAL FOOD ITEM IN A REFRIGERATED ENVIRONMENT

William J. Schulz, West Cornwall, Conn.; Ralph R. Pecoraro, Jacksonville, Fla., and Gerard T. Hogan, Roscoe, Ill., assignors to UOP Inc., Des Plaines, Ill.

Original No. 4,180,125, dated Dec. 25, 1979, Ser. No. 889,763, Mar. 24, 1978. Application for reissue May 2, 1980, Ser. No. 145,953

Int. Cl.[3] **F25B** *29/00*

U.S. Cl. 165—48 R **11 Claims**



1. An apparatus for heating at least one covered container on a meal service tray while other items on the tray are refrigerated comprising an enclosed housing having a plurality of cooperative pairs of guide rails therein for supporting a first pair of opposed side edges of a plurality of trays; means for supplying a refrigerated atmosphere within said enclosure; a

plurality of generally horizontal, thin, heater shelves extending from a side wall of said housing for less than one-half the width of the trays; a ramp surface on at least one end of each of said heater shelves; a plurality of trays, each of said trays having at least one pair of abutment portions integrally supported by said trays and extending transversely over a portion thereof relative to said first opposed pair of side edges, said abutment portions being located sufficiently far above the serving surface of the trays to permit end contact with said at least one covered container while allowing the trays to be slid along said cooperating pairs of guide rails so that said thin heater shelves will pass above the tray surfaces and [beneath the] *under said container contacted by said* abutment portions, the ramp surface on each of said heater shelves being adapted to lift a covered container located on said tray between said at least one pair of abutments, [and] *whereby to* permit said heater shelf with which said container is frictionally engaged to pass under it as said container is restrained by one of said at least one pair of abutment portions.

Re. 30,624

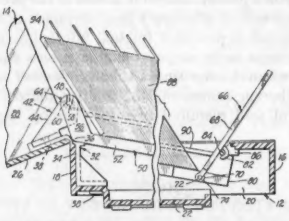
CONTAINER-CARD FILE STRUCTURE

George Soulakis, Hormosa Beach, and Charles G. Mandala, Rancho Palos Verdes, both of Calif., assignors to Eldon Industries, Inc., Hawthorne, Calif.

Original No. 4,091,918, dated May 30, 1978, Ser. No. 763,802, Jan. 31, 1977. Application for reissue Feb. 25, 1980, Ser. No. 124,120

Int. Cl.[3] **B65D** *5/50, 85/00*

U.S. Cl. 206—45.13 **14 Claims**



1. A container which includes a hollow base having an open top and spaced front and rear ends, a lid fitting over and enclosing said top of said base, said lid having front and rear ends, a first pivot means pivotally connecting said rear end of said base with said rear end of said lid so that said lid can be rotated about a first axis between a closed position covering said top of said base and an open position in which said lid extends generally in back of said rear end of said base, carrier means having front and rear ends, for supporting a load, said carrier means being located generally within the interior of said base when said lid is in said closed position, second pivot means pivotally connecting said rear end of said carrier means to said lid adjacent to said rear end of said lid so that said carrier means is rotated about a second axis which is parallel to said first axis during rotation of said lid in which the improvement comprises:

link means for use in pivotally supporting said front end of said carrier means, said link means extending between said carrier means and said base,

third pivot means pivotally connecting said link means and said carrier means so that said carrier means may be rotated relative to said link means about a third axis, said third axis being parallel to said first and said second axes,

fourth pivot means pivotally connecting said link means and said base so that said link means may be rotated about a fourth axis relative to said base, said fourth axis being parallel to said first, second and third axes[.]

arm means attached to said lid, said arm means having an extremity remote from said lid which extends into the interior of said base beneath said first pivot when said lid is in said closed position and which extends above said first pivot when said lid is in said open position,

said second pivot means is located at said extremity of said arm means, and

said arm means supporting the rear end of said carrier means so that during movement of said lid from said closed position to said open position the rear end of said carrier means is elevated relative to the front end of said carrier means and is moved rearwardly of its location when said lid is in said closed position.

Re. 30,625

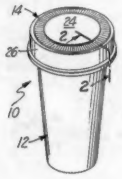
SAFETY CAP AND CONTAINER

Edward G. Akers, 647 Briarfield, Pecan Plantation, Granbury, Tex. 76048

Original No. 3,880,313, dated Apr. 29, 1975, Ser. No. 710,032, Mar. 4, 1968. Continuation of Ser. No. 790,681, Apr. 25, 1977, abandoned. Application for reissue Oct. 30, 1978, Ser. No. 955,708

Int. Cl.[3] **B65D** *55/02*

U.S. Cl. 215—211 **13 Claims**



10. A safety package comprising:

a container having a mouth portion with an annular rim, and having an internal annular sloping surface adjacent to said mouth portion;

a one piece cap having a base with a peripheral flange projecting axially therefrom for receiving said mouth portion;

interengageable locking elements on the outer wall of said container mouth portion and on the inner wall of said cap flange, the cap locking elements being spaced peripherally from each other and engageable with and disengageable from the container locking elements by combined axial and rotative motion of the cap relative to the container;

a member joined to said cap base, providing a resilient, flexible, annular wall extending generally axially therefrom and terminating in an outer annular free end; the inner end of said annular wall being joined integrally to said cap base; said outer annular free end being engageable with said container sloping surface and being deflected radially inward thereby, to exert a biasing force in an axial direction between said cap base and said container effective to maintain said locking elements engaged; and said annular free end of said annular wall being the only portion of said cap engaging said container to exert said axial biasing force.

Re. 30,626

SPHERES OBTAINED BY VAPOR DEPOSITION FOR USE IN BALL POINT PENS

Richard B. Kaplan, Santa Monica, and Sebastian Gonnella, Arleta, both of Calif., assignors to Ultramet of Pacoima, Pacoima, Calif.

Original No. 4,150,905, dated Apr. 24, 1979, Ser. No. 766,880, Feb. 9, 1977. Application for reissue Sep. 14, 1979, Ser. No. 75,611

Int. Cl.[3] **B43K** *7/10;* **C23C** *11/00, 13/00*

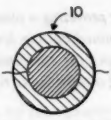
U.S. Cl. 401—215 **19 Claims**

1. A ball particularly suitable for a ball point pen and comprising:

(a) a core consisting of a refractory material capable of

withstanding a temperature in excess of [800°] *500°* C.; and

(b) a coating on said core, said coating being deposited from



the vapor phase by hydrogen reduction of a refractory metal halide, said core and coating having a combined diameter of from approximately 0.5 mm to approximately 1 mm and being substantially spherical.

Re. 30,627

APPARATUS FOR PERFORMING CHEMICAL AND BIOLOGICAL ANALYSIS

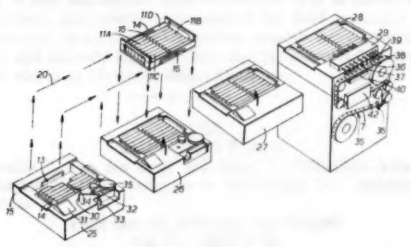
Kenneth D. Bagshawe, London, and James E. Kemble, Burgess Hill, both of England, assignors to Picker Corporation, Cleveland, Ohio

Original No. 3,923,463, dated Dec. 2, 1975, Ser. No. 404,720, Oct. 9, 1973. Application for reissue Apr. 4, 1977, Ser. No. 784,648

Claims priority, application United Kingdom, Oct. 9, 1972, 46521/72

Int. Cl.[3] **G01N** *31/00, 33/56*

U.S. Cl. 23—230 R **54 Claims**



10. Analysis apparatus for performing at least two operations on a liquid sample in a sample container comprising first and second support means at respective first and second stations, each support means being adapted to removably receive a cassette having therein a plurality of sample containers, means at substantially fixed points on said respective support means for performing respective first and second operations on the liquid samples in the respective containers, drive means carried by the respective support means and arranged to project into a cassette when on said support means and engage the containers therein for moving the same in a closed path sequentially from an initial relationship to one another past an operation performing means at the fixed points on the respective support means and back to the initial relationship, and means for operating the respective operation performing means upon arrival of a container at each of the respective fixed points.

Re. 30,628

WEB CUTTING CONTROL SYSTEM

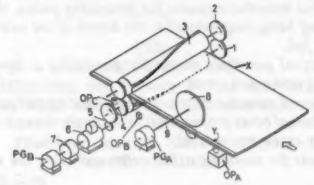
Masateru Tokuno, Nishinomiya; Masayuki Matsuura, Yokohama; Noboru Shinmura, Yokohama, and Masayoshi Kaneko, Yokohama, all of Japan, assignors to Rengo Kabushiki Kaisha (Rengo Co., Ltd.), Osaka and Nippon Riraiansu Kabushiki Kaisha, Yokohama, both of, Japan

Original No. 4,020,406, dated Apr. 26, 1977, Ser. No. 582,406, May 29, 1975. Application for reissue Apr. 24, 1979, Ser. No. 32,886

Claims priority, application Japan, Jun. 7, 1974, 49-65416; Aug. 16, 1974, 49-95260

Int. Cl.[3] **G05B** *19/26;* **B26D** *5/20*

U.S. Cl. 318—600 **8 Claims**



1. A control system for cutting a web fed [at a constant-speed] by means of a rotary cutter driven by a motor selectively either into predetermined lengths or at fixed positions thereof, said control system comprising in combination:

a. first transducer for generating pulses, the number thereof being proportional to the length of the web which has been fed;

b. a second transducer for generating pulses, the number thereof being proportional to the angle through which said rotary cutter has rotated;

c. a first setting means for setting reference pulses, the number thereof being predetermined by a fixed rotating angle of said rotary cutter;

d. a first sensor for detecting the marks put beforehand on the web to give a mark detection signal,

e. a second sensor for detecting completion of each cutting operation to give a cutting completion detection signal;

f. a third sensor for giving a mark distance discriminating signal for discrimination whether the detection of the next mark occurs before or after the completion of cutting on the last mark;

g. a second setting means for digitally setting selectively either a desired cutting length or the distance between the mark detection point and the cutting completion detection point;

h. a first reversible counting means responsive to a detection signal from said first sensor for counting any difference between the value preset on said first setting means and the value preset on said second setting means;

i. an addition/subtraction discriminating means for comparing the value from said first setting means with the value from said second setting means to couple said difference between said two values to said first reversible counting means as a signal to be added or a signal to be subtracted according to the result of comparison;

j. [said first] *a second* reversible counting means receiving the pulses from said first transducer as a signal to be subtracted and the pulses from said second transducer as a signal to be added as well as the difference between said two values and performing reversible counting thereof;

k. a [differentiatin$_g$] *differencing* means for obtaining any difference between the result of said reversible counting by said [first] *second* reversible counting means and a voltage proportional to the web feed speed;

l. a motor speed control means for discriminating the polarity of the output voltage from said [differentiating] *differencing* means and controlling the speed of the motor

for driving the rotary cutter according to the polarity and quantity of said output voltage; and

m. [a second] *said first* reversible counting means *further being* for subtracting from the preset value on said [first sensing] *second setting* means a value corresponding to the length of the web which has been fed from the instant of detection by said first sensor to the instant of detection by said second sensor, in case the mark detection signal from said first sensor arrives [inn] *in* advance of the cutting completion detection signal from said second sensor after the mark distance discriminating signal has come from said third sensor.

2. A control system for controlling the cutting of a web into predetermined lengths by means of a rotary cutter driven by a motor; said control system comprising in combination;

(a) a first transducer means for generating pulses, the number thereof being proportional to the length of the web which has been fed;

(b) a signal generator means for generating a signal proportional to the web speed;

(c) a second transducer means for generating pulses, the number thereof being proportional to the angle through which said rotary cutter has rotated;

(d) means for providing a first reference value, the magnitude thereof being related to the swept circumference of said rotary cutter;

(e) a sensor for establishing a knife position datum signal during each cutting cycle;

(f) a setting means for providing a second value representative of a desired predetermined cutting length;

(g) a combining means for combining said first and second values for obtaining a third value representative of the difference therebetween;

(h) a reversible counting means which receives the third value from said combining means in response to each datum signal and which subtracts therefrom the pulses from said first transducer means and adds thereto the pulses from said second transducer means to achieve a resultant count and producing a signal proportional to the resultant count;

(i) a differencing means for obtaining a signal proportional to any difference between said signal proportional to said resultant count and said signal proportional to the web speed; and

(j) motor control means responsive to the signal from said differencing means for controlling the operation of the motor to cut the web into said predetermined lengths.

PLANT PATENTS

GRANTED MAY 26, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,723
ROSE PLANT

Herbert C. Swim, Ontario, and Arnold W. Ellis, Garden Grove, both of Calif., assignors to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Jan. 9, 1980, Ser. No. 110,766
Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—26 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as shown and described herein, and being particularly characterized by the vigor of its growth habit and the profusion of its blooms, said blooms being of a two-toned pink coloration which accentuates the classic form of the new blooms, said flowers having moderately thick heavy petals, and preserving their freshness over a vase life somewhat longer than average for roses of this class.

4,724
APPLE TREE

J. Ralph Shay, deceased, late of Corvallis, Oreg. by Robert E. Witters; Edwin B. Williams, Lafayette, Ind.; Daniel F. Dayton, Urbana, Ill.; L. Fredric Hough, Bloomsbury; Catherine H. Bailey, Englishtown, both of N.J.; Frank H. Emerson, and Jules Janick, both of West Lafayette, Ind., assignors to State of Oregon Acting by and through the State Board of Higher Education on Behalf of Oregon State University, Corvallis, Oreg.

Filed Mar. 17, 1980, Ser. No. 131,141
Int. Cl.[3]A01H *5/00*

U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct apple tree substantially as shown and described, particularly characterized by field immunity to apple scab, good fresh fruit quality, smooth waxy attractive skin, and maturity approximately two (2) weeks before Jonathan and three (3) weeks before Delicious.

4,725
IMPATIENS PLANT

Cornelis P. Van den Berg, and James C. Mikkelsen, both of Ashtabula, Ohio, assignors to Mikkelsens Inc., Ashtabula, Ohio

Filed Dec. 12, 1979, Ser. No. 103,085
Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of impatiens known by the cultivar name Halo, as described and illustrated, and particularly characterized as to novelty by the combined characteristics of good self-branching; spreading habit; highly variegated foliage; bright orange and large flowers; early flowering; suitability for growing both outside in full sunlight and in hanging baskets; and by its good keeping quality both outside in full sunlight and in hanging baskets.

4,726
KALANCHOE PLANT

James C. Mikkelsen, and Cornelis P. Van den Berg, both of Ashtabula, Ohio, assignors to Mikkelsens Inc., Ashtabula, Ohio

Filed Mar. 26, 1980, Ser. No. 134,114
Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of Kalanchoe plant known by the cultivar name Yellow Nugget, as described and illustrated, and particularly characterized by its uniform deep yellow flower color, on both its top and under sides; excellent branching; dense foliage, and by its adaptability to growth in various pot sizes.

4,727
KALANCHOE PLANT

Cornelis P. Van den Berg, and James C. Mikkelsen, both of Ashtabula, Ohio, assignors to Mikkelsens Inc., Ashtabula, Ohio

Filed Mar. 26, 1980, Ser. No. 134,116
Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of kalanchoe plant, known by the cultivar name Sensation, as described and illustrated, and particularly characterized by its excellent keeping quality, free branching habit, well clustered, red-purple flowers, highly floriferous and vigorous habit, and adaptability to various pot sizes and to growth regulators.

4,728
KALANCHOE PLANT

Cornelis P. Van den Berg, and James C. Mikkelsen, both of Ashtabula, Ohio, assignors to Mikkelsens Inc., Ashtabula, Ohio

Filed Mar. 26, 1980, Ser. No. 134,127
Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of kalanchoe known by the cultivar name Firefly, as described and illustrated, and particularly characterized by its large, bright yellow and well clustered flowers; vigorous plant growth relatively large leaves and strong peduncles, and by its adaptability to growth in varying size pots and to treatment with growth regulators.

PATENTS

GRANTED MAY 26, 1981

ERRATA

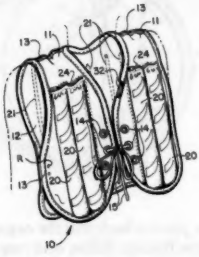
For CLASS	See PATENT NO.
434–330	4,268,978
434–046	4,268,979
368–073	4,269,025
411–034	4,269,106
081–460	4,269,246
411–186	4,269,248
294–163	4,269,337
493–437	4,269,402
369–256	4,269,416
354–323	4,269,501
075–101 R	4,269,699
562–600	4,269,705
518–718	4,269,783
518–715	4,269,784
424–274	4,269,873
219–438	4,270,067
368–118	4,270,068
307–221 D	4,270,144

PATENTS

GRANTED MAY 26, 1981

GENERAL AND MECHANICAL

4,268,917
VARIABLY WEIGHTED VEST
Emmett B. Massey, P.O. Box 685, Concord, N.C. 28025
Filed May 18, 1979, Ser. No. 40,185
Int. Cl.[3] A41D *1/04, 1/00*; A63B *21/12*
U.S. Cl. 2—102 **10 Claims**

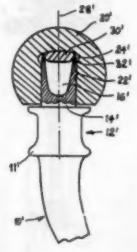


1. A variably weighted vest comprising front and rear panels, means joining the front and rear panels, together at their proximate top and side edges, the joining means at the side edges being above the waist and below the bustline of the wearer, fastening means on opposite sides of the front of the vest occupying only substantially the same horizontal plane as the joining means at the sides of the vest, pockets on the front and back panels of the vest for the reception of desired quantities of weighty material within the range of about one to about thirty pounds, and means for closing the pockets.

4,268,918
NOVELTY CAP
Lois E. Lee, 1917 Oregon St., Berkeley, Calif. 94703
Filed Apr. 25, 1980, Ser. No. 143,946
Int. Cl.[3] A42B *1/24*
U.S. Cl. 2—199 **5 Claims**

1. A novelty cap comprising:
a dome-shaped crown portion whose major diameter is adjustable to fit various head sizes;
a forwardly extending brim located on a front end of the cap;
a first pair of small holes, each of which is located midway up the cap dome on opposite sides of the cap brim;
at least one movable animal feature directly integral with the outer surface of the cap crown portion;
first string connector means having outer end portions connected to the movable animal features;
said string connector means extending through the first pair of holes and downwardly below the cap to form a first loop which can easily fit under the chin of a wearer of the cap;
whereby the wearer of the cap can cause movement of the animal features by pulling and releasing the string loop.

4,268,919
JOINT ENDOPROSTHESIS
Anton Zeibig, Ottensoos, Fed. Rep. of Germany, assignor to Rosenthal Technik AG, Fed. Rep. of Germany
Division of Ser. No. 808,449, Jun. 21, 1977, Pat. No. 4,198,711.
This application Aug. 3, 1979, Ser. No. 63,153
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1976, 2646478
Int. Cl.[3] A61F *1/24*
U.S. Cl. 3—1.91 **7 Claims**

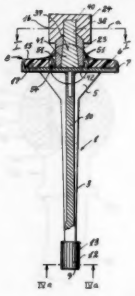


1. Joint endoprosthesis, comprising: an implantable shaft; said shaft having an end; a pin formed at said end of said shaft; said pin having a free end; said pin having a recess defined therein by the material of said pin and extending from said pin free end, and by means of said recess in said pin, the radial compressibility of said pin being increased in the zone of said pin through which said recess passes;
a pivot body having a hole defined by the material of said pivot body, and extending into said pivot body; said hole being shaped such that said pivot body is press fit onto and over said pin free end; said pin recess extending a first distance along the length of and inside of said hole;
a wedging member, positioned in said hole at said free end of said pin and at said recess for being urged into said recess for spreading said pin at said free end thereof, thereby to secure said pin in said hole in said body; said wedging member being generally disc shaped and being shorter in its height dimension into said recess than said first distance, whereby said wedging member is so shaped with respect to the shape of said recess, that said wedging member applies force to spread said pin free end; said wedging member and said hole being so shaped as to clamp said wedging member against said free end of said pin just inside said recess of said pin for squeezing said wedging member against said pin, thereby to secure said pin in said hole.

4,268,920
ENDOPROSTHESIS FOR A KNEE JOINT
Eckart Engelbrecht, Hamburg, and Elmar Nieder, Jork, both of Fed. Rep. of Germany, assignors to GMT Gesellschaft für med. Technik mbH, Hamburg, Fed. Rep. of Germany
Filed Sep. 29, 1978, Ser. No. 946,872
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1977, 2744710
Int. Cl.[3] A61F *1/03*
U.S. Cl. 3—1.911 **32 Claims**
1. In a knee joint endoprosthesis including a femoral compo-

nent, a tibial component and slide bearing means joining the femoral and tibial components to one another and supporting the femoral component on the tibial component; the improvement wherein said slide bearing means comprises

(a) a platform affixed to said tibial component and having
  (1) first and second planar support surfaces spaced from one another and
  (2) an elevation situated between said planar support surfaces and rising above their level; said elevation having first and second inclined lateral surfaces oriented towards the respective first and second planar support surfaces and sloping towards the femoral component;
(b) articulating means mounted on said platform between said planar support surfaces and adjacent said elevation; said articulating means being jointed to said femoral component to provide for flexing motions, rotary motions and shifting motions of said femoral component and said tibial component with respect to one another; said flexing motions having a pivotal axis and a direction which lies in a plane perpendicular to said planar support surfaces of said platform; said rotary motions having a rotary axis perpendicular to said planar support surfaces of said platform; said shifting motions being displacements of said femoral component and said tibial component toward or away from one another; and



(c) first and second parallel-arranged, spaced skid-shaped members affixed to said femoral component and having respective curved first and second bearing faces normally engaging respective said first and second planar support faces of said platform; said skid-shaped members flanking said elevation, whereby upon rotary motion of said femoral and tibial components with respect to one another about said rotary axis, said first and second bearing faces run up on respective said first and second inclined lateral surfaces of said elevation effecting a shifting motion of said femoral and tibial components away from one another.

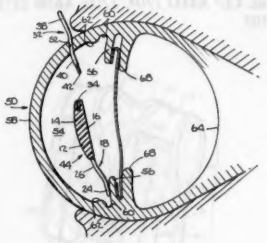
4,268,921

INTRAOCULAR LENSES

Charles D. Kelman, 73 Bacon Rd., Old Westbury, N.Y. 11568

Filed Oct. 22, 1979, Ser. No. 86,804
Int. Cl.[3] A61F *1/16, 1/24*
U.S. Cl. 3—13 **26 Claims**

26. An intraocular insert suitable for use as an artificial lens in the interior of a human eye, said eye interior having a groove extending circumferentially at upper and lower portions of the eye when viewed in cross-section, said upper and lower groove portions having respective interior peripheral surfaces, said insert comprising a medial light-focusing lens body with first and second opposite peripheral sections corresponding to said upper and lower groove portions, first position fixation means comprising a first support member joined to said first peripheral section of said lens body and extending generally radially beyond said first peripheral section to define a first seating portion engageable with one of said groove portions, second position fixation means comprising independent second and third members joined to said second peripheral section of said lens body said second and said third support members extending radially beyond said second peripheral section at a predetermined angle with respect to each other to define respective second and third seating portions engageable with the other said groove portion such that the engagement of the first and second position fixation means with respective said groove portions align the lens body with respect to the pupil of the eye, at least one of said second and said third support members being formed separately of and detached from said lens body for connection to said lens body when said insert is inserted into said eye and means for connecting said one of said second and said third support members to said lens body.

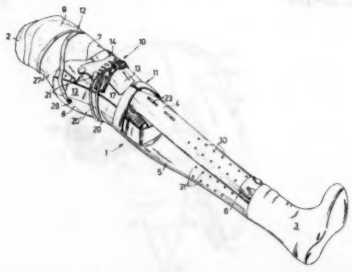


4,268,922

PREFABRICATABLE, ARTIFICIAL LOWER LEG

Gunnar Marsh, Karlskrona, and Christer B. Olander, Lyckeby, both of Sweden, assignors to Landstingens Inköpscentral, Lic, ekonomisk förening, Solna, Sweden

Filed Oct. 9, 1979, Ser. No. 82,757
Claims priority, application Sweden, Oct. 12, 1978, 7810653
Int. Cl.[3] A61F *1/08*
U.S. Cl. 3—21 **8 Claims**



1. A prosthesis for replacing an amputated lower leg comprising a front plate and a back plate opposing the front plate, said plates having lower portions and upper portions and being rigidly joined to each other at their lower portions and adapted to be articulately connected at their lower portions to a prosthetic foot, the upper portion of each plate being shaped as a sleeve half and cooperating with the other sleeve half in a circular configuration to form an upward bowl-like enlarged carrying sleeve, the material of the plates being sufficiently spring-like to allow the upper portions of the plates to be resiliently pulled apart so that a leg stump can be inserted into the carrying sleeve; means for pulling the sleeve halves together so as to maintain a firm grip around a leg stump, means for laterally adjusting the prosthesis relative to a stump, and means for fixing the prosthesis longitudinally relative to a stump.

4,268,923

THIGH PROSTHESIS

Lamberto Staffieri, Via Matteotti 28, Torbole Sul Garda, Italy

Filed Jan. 17, 1980, Ser. No. 112,763

Int. Cl.[3] A61F *1/04, 1/08*

U.S. Cl. 3—22 **6 Claims**

1. A thigh prosthesis or artificial leg comprising an upper socket portion designed to be secured, in use, to an amputee's stump, a lower leg portion, an articulation frame joining the socket portion to the leg portion, and resilient means for limiting and cushioning the articulation motion of the said articulation frame;

the said socket portion having a downwardly extending projection carrying a lower pivot mounting and an upper pivot mounting which is arranged in a forward position, in the forward deambulation direction, with respect to the said lower pivot mounting and is in vertical misalignment therewith;

the said leg portion comprising a rod or bar carrying a weight or foot at its lower end and being linked to the said articulation frame at, or close to, its upper end; and

the said articulation frame includes at least one upper link transversely extending with respect to the said downwardly extending projection and being secured at one end thereof to the said upper pivot mounting and at the other end thereof to the said upper end of said rod or bar, and at least one lower link having one end pivotally secured to the said lower pivot mounting and its other end pivotally secured to the said rod or bar in an intermediate position thereof close to its upper end.

4,268,924

SYPHON-OPERATED CLOSET BOWL FLUSH TANK

William Price, 7 Fletcher St., and Howard W. Ellison, 25 Burgess Ave., both of Warrington, England

Filed Nov. 13, 1979, Ser. No. 93,109

Claims priority, application United Kingdom, Nov. 11, 1978, 44166/78

Int. Cl.[3] E03D *1/08, 1/14, 3/12*

U.S. Cl. 4—373 **5 Claims**

1. In a syphon-operated closet bowl flush tank of the kind comprising an inverted bell containing a liftable plunger disc to initiate syphon action, a valve comprising:

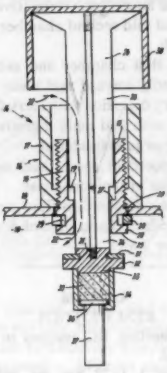
(a) a tubular body part mounted vertically on the top of the bell and extending above said bell;

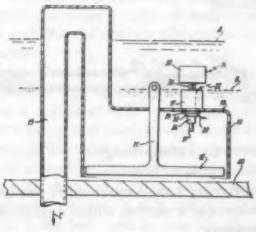
(b) a stem movable in and guided by the body part, shaped to define a flow path through the body part, and having lower and upper portions extending respectively below and above the top of the bell;

(c) a valve seat on a downward facing surface of the body part inside the bell;

(d) a co-operating valve seat on an upwardly facing surface on the lower portion of the valve stem; and

(e) a float on the upper portion of the valve stem: arranged so that: with the tank filled with water, the float acts on the stem to urge the valve seats together; with the plunger





lifted and retained lifted, the seats are held together; and with the plunger lifted and released immediately after the flush starts the float falls as water level falls so that the seats move apart to allow air to enter the bell when the water level reaches the top of the tubular body part to break the syphon and arrest the flush.

4,268,925

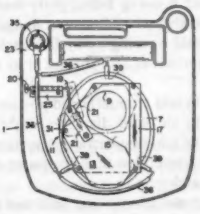
SEWAGE TREATMENT SYSTEM

Elwood Marple, Tampa, Fla., assignor to W. L. Burke, Inc., Brandon, Fla.

Continuation of Ser. No. 22,860, Mar. 22, 1979, abandoned. This application Jan. 3, 1980, Ser. No. 109,202

Int. Cl.[3] A47K *11/02*

U.S. Cl. 4—449 **12 Claims**



1. A biochemical sewage treatment system for progressive

digestion of organic material disposed in water, comprising in combination:

a main digestive tank for receiving the organic material;

a weir disposed in said main digestive tank dividing said main digestive tank into a first chamber and a second chamber;

a first and a second air diffusor respectively disposed in said first chamber and said second chamber for aeration of the organic material;

the floors of said first chamber and said second chamber sloped downwardly toward said weir;

a series of secondary digestion tanks serially disposed in fluid communication with said main digestive tank to progressively digest the organic material;

an air diffusor disposed in one of said secondary digestion tanks to aerate the organic material;

a final digestion tank disposed in fluid communication with the last said secondary digestion tank for storing the essentially organic-free water.

4,268,926

RESCUE TOOL

George F. Roxton, Wheeling, Ill., assignor to Paratech Incorporated, Frankfort, Ill.

Filed Dec. 1, 1978, Ser. No. 965,577
Int. Cl.[3] B25D *1/04*
U.S. Cl. 7—143 **13 Claims**

1. A rescue tool comprising:

an extended hollow housing;

a tool bit having a shaft mounted in one end of said housing for reciprocable motion within a relatively short length of said housing;

retention means for selectively preventing the removal of said tool bit from said housing and for limiting the extent to which said tool bit travels into said housing;

a substantially solid hammer extending into said holding from the end opposite said tool bit and mounted for reciprocable motion therein to strike said tool bit, said hammer extending for the greater portion of the length of said housing when striking said tool bit;

a shroud adapted to be gripped by the human hand and fitting over a portion of said housing with sufficient clearance to permit reciprocation relative thereto, said shroud secured to said hammer at the end of said hammer away from said tool bit to provide for manual reciprocation of said hammer with respect to said housing;

lock means for selectively preventing relative movement between said hammer and said housing to permit use of the rescue tool as a pry bar;

a keeper flange with an outer diameter greater than the outer diameter of said housing but slightly less than the inner diameter of said shroud, said keeper flange being mounted on the end of said housing away from said tool bit;

a counterbored portion of said shroud at its end toward said tool bit;

a groove formed in said counterbored portion of said shroud;

a lock ring having an outer diameter slightly less than the inner diameter of said counterbored portion of said shroud and an inner diameter less than the outer diameter of said keeper flange; and

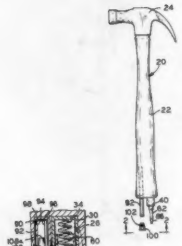
a snap ring to fit in said groove and hold said lock ring in said counterbored portion of said shroud, said lock ring engaging said keeper flange to prevent complete withdrawal of said hammer from said housing.

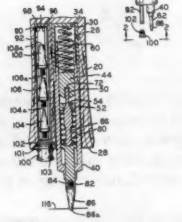
4,268,927

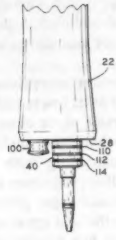
COMBINATION TOOL

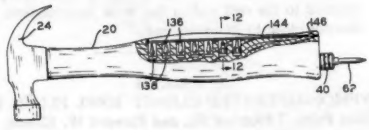
Phillip P. Bridwell, R.R. #1, P.O. Box 535, Anna, Ill. 62906

Filed Feb. 26, 1979, Ser. No. 14,969
Int. Cl.[3] B26B *9/02*; B26F *1/00*
U.S. Cl. 7—143 **10 Claims**









1. A tool comprising:

an elongated hammer handle adapted to receive a hammer

head at one end and having an elongated cylindrical passage with an opening at the other handle end;

an elongated cylinder member having a cylinder axis and being inserted in said opening;

an impact member reciprocably mounted for inward and outward movement in said cylinder and extendible outwardly from said opening;

impact means mounted in said cylinder for providing a sudden impact force to drive said member outwardly from said opening upon a predetermined inward movement of said member and including adjustment means for providing manual adjustment of the impact force of said impact means, said impact means further comprising a spring loaded drive piston reciprocably mounted in said cylinder, and said adjustment means comprising means for varying the spring preload of said drive piston;

said cylinder member extending outwardly from said other end of said handle by an amount which is related to the preload on said spring;

axially spaced markings on said cylinder member, said markings being successively visible as said cylinder member is threadedly adjusted from said cap outwardly from said other end of said handle;

a plurality of differently marked impact tools each for use with a respective different adjusted position of said cylinder member as indicated by the nearest visible first marking to said other end of said handle; and

said impact means having means for releasably retaining an impact tool, whereby by matching the markings of said tools to a respective marking on said cylinder member that is first visible will obtain the proper impact force for each tool.

4,268,928

METHOD AND APPARATUS FOR APPLYING A LIQUID ON A MOVING WEB IN PATTERNS

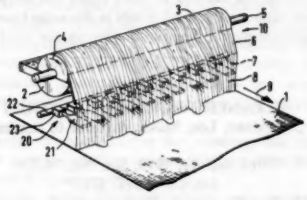
Heinz Grüber, Tönisvorst, Fed. Rep. of Germany, assignor to Eduard Küsters, Krefeld, Fed. Rep. of Germany

Division of Ser. No. 918,947, Jun. 26, 1978, Pat. No. 4,202,188. This application Mar. 13, 1980, Ser. No. 130,099

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1977, 2730891

Int. Cl.³ D06B *11/00*

U.S. Cl. 8—149 **6 Claims**



1. In a method for applying a liquid to a moving web in patterns, wherein a cohesive liquid shroud falling on the web from above is interrupted in a pattern, the improvement comprising blowing a fluid medium transversely against the falling shroud to displace portions thereof without affecting said cohesiveness.

4,268,929

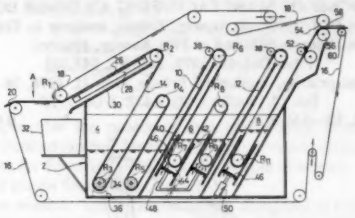
METHOD AND APPARATUS FOR CLEANING RUGS AND MATS

Finn L. Sörensen, and Robert Neubert, both of Hornslet, Denmark, assignors to Clean-Tex A/S, Mörke, Denmark

Filed Feb. 4, 1980, Ser. No. 118,090

Int. Cl.³ D06B *3/12, 3/20*; B08B *3/10*

U.S. Cl. 8—151 **11 Claims**



1. A method for cleaning of rugs and mats having a nap or pile on one side, preferably for washable dust control mats, whereby the mats are successively conveyed along a conveying path and are exposed to different cleaning operations in a number of stations, characterized in that the mats in at least one of the stations are exposed to a relatively abrupt change of direction of conveyance in order to open an area of pile at the pile side of the mat, and that the opened pile area is exposed to a pulsating fluid pressure.

3. A washing machine for cleaning rugs or mats having a nap or pile on one side thereof, e.g. washable dust control mats, the machine comprising a mat treatment vessel and guiding and conveying means to convey mat successively along a bandlike conveying path through the treatment vessel, characterized in that the guiding and conveying means are arranged so as to define a conveying path showing a relatively sharp bend at a predetermined treatment position in said vessel to effectively cause the nap or pile in the bent area to open or expand when it passes through said bend, said nap or pile in said bend being the radially outermost part or layer of the mat, and that a fluid pulsating means is arranged in the vessel operable to expose the area of the nap or pile thus opened or expanded to a fluid pulsation treatment.

4,268,930

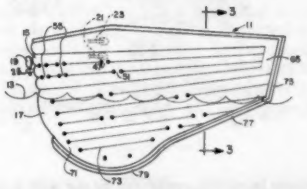
INFLATABLE MINI BOAT

George P. Gillespie, Plumstead Township, Bucks County, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 1, 1977, Ser. No. 812,034

Int. Cl.³ B63B *7/00*

U.S. Cl. 9—2 A **2 Claims**



1. An inflatable boat having a hull of inner and outer panels contoured to closely conform to an occupant seated in the stern with his legs extended forwardly, and partitioned by continuous seams between the opposed surfaces of said panels into first and second separately inflatable cells co-directional with the length of said boat; wherein the improvement comprises:

first and second intercommunicating sections formed in said second cell respectively above and below the first cell, said first section forming thereby the gunwale of said boat; and

first and second inflatable channels disposed in the bow of said boat intercommunicating between said first and second sections and causing the bow to assume a blunt shape.

4,268,931

PROCESS OF MANUFACTURING AN INNER BOOT

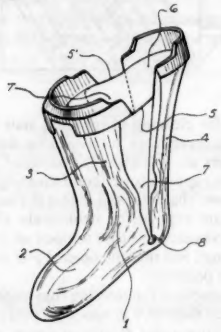
Georges P. J. Salomon, Annecy, France, assignor to Etablissements Francois Salomon et Fils, Annecy, France

Filed Oct. 19, 1977, Ser. No. 843,381

Claims priority, application France, Oct. 21, 1976, 76 31719

Int. Cl.[3] **A43D** *9/00;* **A43B** *5/04, 3/10*

U.S. Cl. 12—146 R **9 Claims**



1. Molding process for an article of footwear to be placed in a boot, said article of footwear being molded as a single piece with its upper part having substantially the shape of said article in its open position, whereby said article can be conveniently put on and taken off.

4,268,932

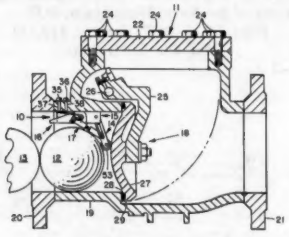
SPHERE LAUNCHING APPARATUS

Alfred D. Hogan, Tulsa, Okla., assignor to Geosource, Inc., Houston, Tex.

Filed Mar. 23, 1979, Ser. No. 23,233

Int. Cl.[3] **B08B** *9/04*

U.S. Cl. 15—104.06 A **26 Claims**



1. A sphere launching apparatus for use with a valve having a valve closure member for releasing spheres into a pipeline, comprising:

a support means for mounting adjacent a valve closure member of a valve;

a sphere releasing means having a first pivot axis pivotally mounted on the support means about the first pivot axis for operatively engaging the valve closure member on the valve to provide angular movement to the releasing means in response to angular movement of the valve closure member between open and closed positions;

a sphere catcher means having a second pivot axis pivotally mounted on the support means about the second pivot axis spaced from the first pivot axis for releasably engaging a sphere; and

actuating means operatively connecting the releasing means and catcher means for pivoting the catcher means to provide angular movement of the catcher means into and out of engagement with successive spheres upon angular pivoting of the releasing means to position a sphere for release and to release a single sphere upon opening and closing of the valve closure member.

4,268,933

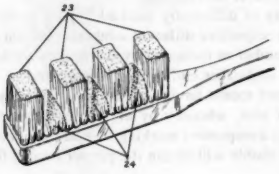
BRISTLES FOR AN INTERPROXIMAL AND PERIODONTAL TOOTHBRUSH

Sophia Papas, 49 Mellow La., Jericho, N.Y. 11753

Filed Nov. 30, 1979, Ser. No. 98,859

Int. Cl.[3] **A46B** *9/04*

U.S. Cl. 15—167 R **3 Claims**



1. In a toothbrush having bristles attached to the end of a rigid frame for the purpose of inserting the bristles into the mouth to brush the teeth, wherein the improvement comprises:

(a) groups of long, soft, bristles alternating with groups of shorter, soft, bristles from which shorter bristles are shaped four (4) sloping sides rising together to form the apex of a pyramidal shaped group, and

(b) which group of pyramidal shaped, soft bristles, begin at the perimeter of the base of the pyramid, on the frame, with bristles rising, convexly, from the perimeter of the four sides to a common apex shorter in height than the bristles of the longer clump, with two of the four sides perpendicular to the long axis of the frame and the other two sides, opposite each other, parallel to the long axis of the frame, and

(c) with the spacing of the alternating clumps of different sized bristles closely approximating the average width of the teeth with the longer bristles fitting into and between the spaces between the teeth, and the shorter pyramidal bristles fitting reversely into the gingival border around the base of the crowns of the teeth, and

(d) allowing the bristles to both clean the crowns and the spaces between the teeth while at the same time massaging and exercising the gingiva bordering the teeth.

4,268,934

CLEANER FOR CIRCUIT BOARDS

Anthony Q. Testone, Lee, Mass., assignor to Statics, Inc., Lee, Mass.

Filed Sep. 12, 1979, Ser. No. 74,739

Int. Cl.[3] **A47L** *5/22*

U.S. Cl. 15—306 B **21 Claims**

1. A cleaner for a printed circuit board or the like comprising:

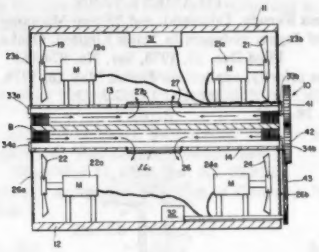
an upper hollow, elongate housing having a lower wall having an aperture therein,

a lower hollow, elongate housing having an upper wall having an aperture therein,

means for mounting said housings with their longitudinal

axes substantially parallel with their said walls spaced apart to provide a slot therebetween having ends, an entry portion between said ends in advance of said apertures and an exit portion between said ends behind said apertures,

means for drawing air into said housings through said apertures, and



means for restricting entry of air into said slot to the ends thereof,

whereby a circuit board passing from said entry portion to said exit portion along a path across said slot is swept by air entering said slot at the ends thereof and entering said housings through said apertures.

4,268,935

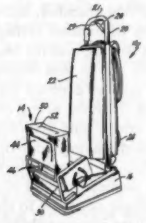
CARPET CLEANING MACHINE

Walter L. Bessinger, Grand Haven, Mich., assignor to Clarke-Gravely Corporation, Muskegon, Mich.

Division of Ser. No. 921,194, Jul. 3, 1978. This application Sep. 21, 1979, Ser. No. 77,569

Int. Cl.³ A47L *11/202*

U.S. Cl. 15—320 **20 Claims**



1. In combination, a vacuum cleaner of the type including a housing, an agitator brush rotatably supported within said housing, a suction nozzle, a dust collection tank, and a source of vacuum connected to said nozzle by a suction passage and an attachment for dispensing a powdered cleaning compound adjacent said agitator brush, the attachment including a hopper defining an elongated outlet slot and being securable to said cleaner housing, said attachment further including rotatable discharge assistant means supported within said hopper for metering said powder to said outlet slot, the improvement comprising:

means carried by said hopper for rotating said discharge assistant means including an air driven turbine having an air inlet and an air outlet passage;

an air throttle valve disposed within said turbine outlet passage;

an operator control member mounted on said cleaner; and

connection means permanently mounted on said vacuum cleaner and said hopper for automatically connecting said operator control member to said air throttle valve upon attachment of said dispensing attachment to said vacuum cleaner housing.

4,268,936

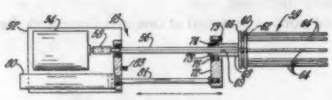
APPARATUS FOR CHOPPING STRANDS

Fred S. Coffey, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 10, 1979, Ser. No. 65,690

Int. Cl.³ D01G *1/04*

U.S. Cl. 19—0.56 **6 Claims**



1. Apparatus for removing undesirably long sections of strand from advancing discrete segments of strand comprising:

means for forming said discrete segments of strand;

drive means for rotating a shaft;

a first member rigidly fastened at the distal end of said shaft, said member having a plurality of apertures adapted to slidably receive a plurality of after-defined rods adapted to collect said undesirably long sections of strand thereon;

a second member adapted to move along the length of said shaft; and

a plurality of rods rigidly fastened to said second member such that as said second member is moved along the length of said shaft, said rods are moved through said first member such that said undesirable sections of strand attached to said rods are removed therefrom.

4,268,937

METALLIC WIRE TYPE CARD-CLOTHING

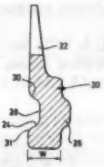
Keith Grimshaw, Todmorden, England, assignor to The English Card Clothing Company Limited, Huddersfield, England

Filed May 24, 1979, Ser. No. 42,113

Claims priority, application United Kingdom, May 25, 1978, 22658/78

Int. Cl.³ D01G *15/88*

U.S. Cl. 19—114 **10 Claims**



1. Interlocking metallic wire type card-clothing having a rib portion and a tooth portion, a male section protruding along one side of said rib, and a female section formed in the other side of said rib, the pitch width of said rib measured from one flank to the other being not greater than 1.65 millimeters, and the maximum depth of said female section, measured from the flank of the female side of said rib, and perpendicular to that flank, being not substantially greater than half the pitch width of said rib.

4,268,938

CLOSURE DEVICE FOR CONTAINER

John R. Walchli, Palos Verdes Estates, Calif., assignor to Enviropak Inc., El Segundo, Calif.

Filed Jul. 23, 1979, Ser. No. 59,975

Int. Cl.³ A44B *19/10*

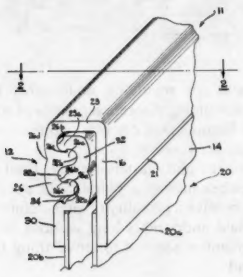
U.S. Cl. 24—201 C **5 Claims**

1. A closure for detachably joining together the edges of an opening in a container, said closure including first and second

elongated closure pieces each having an attachment flap attached to one of the edges of said opening and a fastener strip having alternate elongated grooves and hooked ridges which interlock with each other, the improvement wherein means is included in said second piece for forming a cover over the joining edges of said closure comprising:

a riser portion attached at one end thereof to the attachment flap of said second piece and extending substantially normally therefrom and

a head portion attached at one end thereof to the other end



of said riser portion and extending substantially normally from said riser portion towards the fastener strip of said first piece,

the fastener strip of said second piece extending substantially normally from the other end of the head portion and opposite the riser portion,

whereby the riser portion, head portion and fastener strip of said second piece form a cover over the closure thereby limiting access to the joinder edge of the closure to the portions thereof directly opposite the attachment flap of the first piece.

4,268,939

SLIDER FOR A LARGE SIZED SLIDE FASTENER

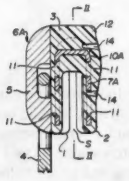
Takeo Fukuroi, Uozu, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jul. 3, 1979, Ser. No. 54,439

Claims priority, application Japan, Jul. 7, 1978, 53/93721[U]

Int. Cl.³ A44B *19/00*

U.S. Cl. 24—205.15 R **7 Claims**



1. In a slider for a large sized slide fastener comprising a slider body of synthetic resin material and an integrally formed metal core member embedded in said slider body, said slider body including opposed top and bottom planes and a neck portion connecting said top and bottom planes at one end thereof, said core member including portions each corresponding to said top plane, the bottom plane and the neck portion of said slider body and substantially uniformly extending throughout the entire area of said slider body, characterized in that said core member including in the portions corresponding to the top plane, bottom plane and neck portion of said slider body a plurality of apertures or recesses which receive a portion of the synthetic resin material of said slider body upon molding thereof.

4,268,940

PROCESS AND APPARATUS FOR CRIMPING FILAMENT YARN

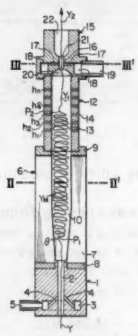
Toshimasa Kuroda, Takatsuki, and Mitsuo Matsumoto, Ibaraki, both of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Dec. 29, 1978, Ser. No. 974,463

Claims priority, application Japan, May 16, 1978, 53-57128

Int. Cl.³ D02G *1/12*

U.S. Cl. 28—255 **10 Claims**



1. In a process for fluid crimping filament yarn comprising forcing a hot fluid entrained filament yarn into a stuffing chamber in one direction to form a filament pad which extends into a staying control chamber downstream of said stuffing chamber, forcing a cold fluid into said staying control chamber from an opposite direction, exhausting the hot fluid from a hot fluid outlet located in said stuffing chamber, and exhausting the cold fluid through a plurality of exhaust orifices located in series along the length of said staying control chamber whereby the end of said filament yarn pad in said staying control chamber controls the number or orifices exposed for outlet of said cold fluid to control the back pressure acting on the filament yarn pad, the improvement comprising withdrawing the filament yarn from the end of said staying control chamber opposite said stuffing chamber through a yarn intermingle bore having a diameter less than the diameter of said staying control chamber and imparting a filament cohesion to the yarn by injecting said cold fluid into said yarn intermingle bore against said yarn through at least two cold fluid jet bores which are symmetrically and radially disposed at right angles to the yarn intermingle bore and which intersect said yarn intermingle bore between the midpoint of said yarn intermingle bore and said staying control chamber with the ratio of the total cross-sectional area of said jet bores to the cross-sectional area of said yarn intermingle bore being from 0.80 to 1.23.

5. In an apparatus for crimping a filament yarn comprising a stuffing chamber having a hot fluid jet nozzle at one end thereof to plasticize and drive the filament yarn into said stuffing chamber and a hot fluid outlet to exhaust the hot fluid separated from the filament yarn supplied through said hot fluid jet nozzle, a staying control chamber disposed in communication with said stuffing chamber downstream thereof, said staying control chamber having a plurality of small outlet orifices for the exhaust of a cold fluid located in series along the length of said staying control chamber, the improvement comprising nozzle means located in said staying control chamber adjacent the end thereof opposite said stuffing chamber, a yarn intermingle bore extending through said nozzle means and having a diameter less than the diameter of said staying control chamber and at least two jet bores symmetrically intersecting said yarn intermingle bore radially at right angles

thereto, said jet bores intersecting said yarn intermingle bore between the midpoint of said yarn intermingle bore and said staying control chamber and the ratio of the total cross-sectional area of the jet bores to the cross-sectional area of said yarn intermingle bore being from 0.80 to 1.23 whereby cold fluid may be injected into said bore through said jet bores to impact upon the filament yarn passing therethrough to impart filament cohesion to the yarn.

4,268,941

PROCESS FOR THE CONTINUOUS SHRINKING OF YARNS

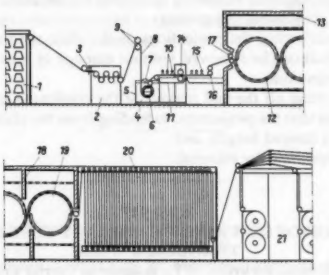
Hans Fleissner, Riehen/Basel, Switzerland, assignor to Vepa Aktiengesellschaft, Riehen/Basel, Switzerland

Filed May 17, 1979, Ser. No. 39,891

Claims priority, application Fed. Rep. of Germany, May 19, 1978, 2822026

Int. Cl.³ D02J *1/22*

U.S. Cl. 28—281 **6 Claims**



1. A process for the continuous shrinking of textile material by initially exposing the material to the effect of a hot treatment liquid prior to placing the material on a curved support, allowing the same hot treatment liquid to flow through the material, disposed loosely on the support to obtain complete shrinkage, and thereafter drying the material and setting the material on sieve drums under a suction draft, characterized by the steps of shrinking a plurality of twisted yarn threads in the wet state together in parallel, side-by-side relationship at temperatures of from about 60° to the boiling point of the treatment liquid; then cooling the threads by cold water and subsequently, in the wet state, to continue the thus initiated shrinking process, depositing the threads without tension on a first sieve drum of a plurality of successive drums subjected to a through flow of a heated gas, to develop the thus obtained shrinkage, during which the threads are initially gradually dried in the region of the saturation temperature limits, and compressed by differences in the speeds of the successive sieve drums, and only thereafter setting the shrinkage value, by drawing a gas heated to a temperature of from 180° to 200° C. through the threads which are further guided in parallel to one another on another sieve drum of said plurality of successive drums.

4,268,942

METHOD AND APPARATUS FOR MANUFACTURING BOXED ENCAPSULATED CAPACITORS

John R. Meal, Naperville, and Donald K. Sandmore, Oak Lawn, both of Ill., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Sep. 4, 1979, Ser. No. 72,394

Int. Cl.³ H01G *4/06*

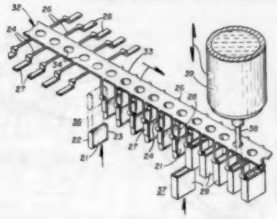
U.S. Cl. 29—25.42 **8 Claims**

1. A method of encasing and encapsulating an electrical component, which comprises:

cyclically advancing a lead frame strip having pairs of depending leads between which are secured electrical components;

partially filling a succession of cases with encapsulant;

moving each case toward each advanced electrical component to partially submerge each of said components in said encapsulant;



supporting each of said cases during subsequent cyclic advance of the lead frame strip to advance the cases; and

injecting into each of said subsequently advanced cases additional encapsulant to completely submerge the electrical component therein.

4,268,943

ELASTIC ROLLER FOR IMAGE FORMING

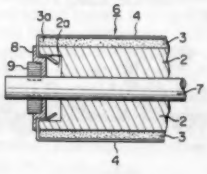
Tsuyoshi Watanabe, Kawasaki; Hidetoshi Murase; Akira Murayama, both of Yokohama, and Mikio Nakasugi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 9, 1979, Ser. No. 55,559

Claims priority, application Japan, Jul. 26, 1978, 53-91046

Int. Cl.³ B21B *27/02*; G03G *15/06*

U.S. Cl. 29—131 **9 Claims**



1. An elastic roller comprising an axial core member, and an elastic, liquid retentive layer of foam structure, having a uniform thickness, surrounding the circumference of said core member, said elastic roller further comprising a flexible, liquid permeable member in the form of a sleeve having an inner diameter smaller than the outer diameter of said roller, said flexible member being disposed to cover the circumference of said roller and having extensions extending beyond both ends of said roller and being shrunk along both ends of said elastic foam structure layer so as to cover also said both ends of the layer with said flexible member.

4,268,944

TENSION CONTROL OF FASTENERS

Siavash Eshghy, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 912,151, Jun. 2, 1978, Pat. No. 4,179,786, which is a continuation-in-part of Ser. No. 766,429, Feb. 7, 1977, Pat. No. 4,106,570, and Ser. No. 712,554, Aug. 9, 1976, abandoned. This application Apr. 19, 1979, Ser. No. 31,352

Int. Cl.³ B23P *19/06*

U.S. Cl. 29—407 **6 Claims**

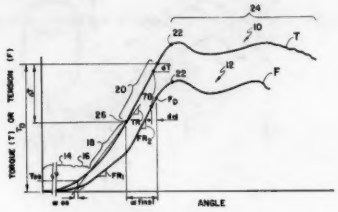
1. A method of tightening seriatim a multiplicity of substantially identical joints comprising a plurality of pieces and a

threaded fastener pair including first and second components for clamping the pieces together, comprising

applying torque to the fastener pair for threadably advancing the same and imparting tension to the first component;

determining the torque rate of the fastener pair;

normally terminating tightening of the fastener pair in response to a tightening parameter at a tension value adjacent a desired final tension value;



determining whether the first fastener component is developing tension including comparing the determined torque rate with a predetermined minimum torque rate; and

terminating tightening of the fastener pair prior to the attainment of the tightening parameter in the event the determined torque rate is below a minimum predetermined torque rate.

4,268,945

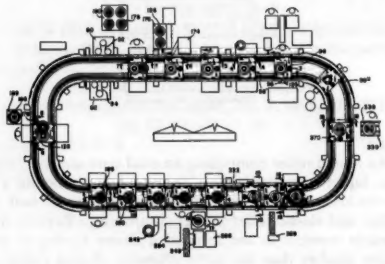
METHOD OF ASSEMBLYING A SEALED STRUCTURE

William L. Van Arman, Niles, Mich.; Russell A. Kambs, Michigan City, Ind.; Steven G. Ivankovics, South Bend, Ind.; Frederick W. Hansen, South Bend, Ind., and Thomas M. Julow, South Bend, Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jun. 5, 1979, Ser. No. 45,713

Int. Cl.[3] B23Q *17/00*

U.S. Cl. 29—407 **19 Claims**



1. A method of assembling a servomotor wherein a first shell having a first peripheral surface is located on a fixture, a diaphragm assembly is positioned on the first peripheral surface to define a first chamber between the first shell and the diaphragm assembly, a spring is connected to the diaphragm assembly, and a second shell having a second peripheral surface is placed on the spring, the improvement comprising:

applying a force for moving the second shell in opposition to the spring toward the first shell unit the diaphragm assembly is between the first and second peripheral surfaces, said diaphragm assembly and second shell defining a second chamber;

evacuating air from the first and second chambers to create a pressure differential therebetween with the surrounding environment; and

removing said force from the second shell, said pressure differential acting on said first and second shells to hold the first and second peripheral surfaces against the diaphragm assembly until such time as any air may enter the first and second chambers and allow said spring to urge the second shell away from the first shell.

4,268,946

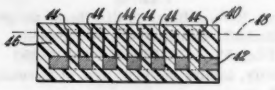
METHOD FOR FINISHING A PLATE

Arnold J. Eisenberg, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jun. 8, 1977, Ser. No. 804,825

Int. Cl.[3] B23P *17/00*

U.S. Cl. 29—424 **11 Claims**



1. Method of finishing a high temperature resistant plate having projections extending therefrom for use in the manufacture of glass fibers comprising:

(a) reinforcing the projections of the plate with a material which can be removed without damage to the reinforced projections;

(b) cutting off the end regions of the reinforced projections such that the projections extending from the plate are each of a desired length; and

(c) removing the material.

4,268,947

METHOD OF SECURING A CAPILLARY TUBE PASSING THROUGH A WALL

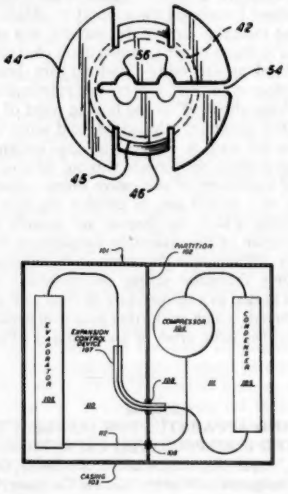
James R. Hile, Kirkville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 828,447, Aug. 29, 1977, Pat. No. 4,175,402.

This application Dec. 14, 1978, Ser. No. 969,507

Int. Cl.[3] B23P *11/02*

U.S. Cl. 29—451 **2 Claims**



1. A method of securing at least one small diameter component in an opening extending through a wall of a refrigeration machine which comprises the steps of:

securing the component in a retainer plate having apertures for the receipt of the component, said step of securing including

forming a slot in the retainer plate, said slot joining the apertures of the retainer plate to an exterior edge of the retainer plate;

spreading the retainer plate such that the component may be slid into the slot therein;

sliding the component into the slot to an aperture where the component may be secured; and

releasing the retainer plate so that the component is secured within the aperture connected to the slot; and

affixing the retainer plate to the wall, said retainer plate having a body attached thereto and at least one fastening leg formed from the body but movable separate therefrom and wherein the step of affixing further includes

compressing the fastening leg; and

inserting the compressed fastening leg through the opening in the wall such that the fastening leg resumes its original position contacting the wall on one side and the retainer plate contacting the wall on the other side such that the retainer plate is secured to the wall and the component are secured within the retainer plate.

4,268,948

PARTING DEVICE

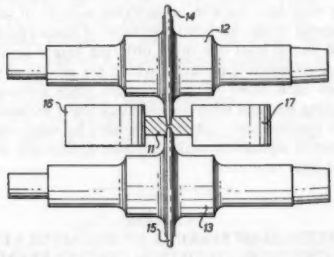
Per O. Strandell, Taeby; Erik M. Thorslund, Upplands Vaesby, both of Sweden; Colin R. MacKenzie, Motherwell, and Norman Smith, Wishaw, both of Scotland, assignors to British Steel Corp., London, England

Filed Feb. 12, 1979, Ser. No. 11,637

Claims priority, application United Kingdom, Feb. 28, 1978, 7899/78

Int. Cl.³ B21B *1/44*

U.S. Cl. 29—527.6 **30 Claims**



1. A device for forming parting grooves in a flat plastically deformable metal workpiece having a maximum thickness of h_o by impressing tools into its opposite flat sides and permitting lateral spread of the workpiece, the portions of the tools forming the parting grooves each having the shape of a ridge which, when viewed in cross section, has substantially straight or slightly convexly curved convergent flank edges which at their closer ends merge into a straight or curved end edge, wherein the angle α included by chords through the end points of the flank edges is from 20° to 60°, the distance ϵ between the flank edges at their points of transition into the end edge is from 0.06 to 0.20, preferably from 0.07 to 0.16, times the maximum thickness h_o and also $\epsilon \cdot \tan \alpha/2$ exceeds 2.3 mm.

4,268,949

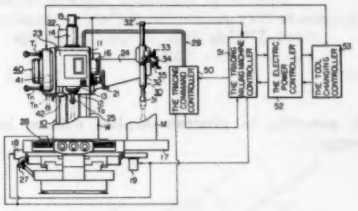
TRACING MILLING MACHINE

Makoto Sato, Aikawamachi, Japan, assignor to Makino Milling Machine Co., Ltd., Tokyo, Japan

Filed Oct. 4, 1979, Ser. No. 81,648

Int. Cl.³ B23Q *3/157*; B23C *1/16*

U.S. Cl. 29—568 **6 Claims**



1. A tracing milling machine including a machine body, a vertical spindle head supporting therein a rotatable spindle to which a cutting tool is removably attached, a tracer portion having a displaceable tracer for tracing a model and a tracer head capable of issuing a signal that indicates the amount of displacement of the tracer, a movable work table on which the model and a workpiece to be machined into a product corresponding to the model are fixedly mounted, respectively, and a tracing milling machine controller for controlling a servo movement of the work table in a vertical and a horizontal direction upon being supplied with tracing commands and with the displacement amount signals of the tracer, wherein an improvement comprises a combination of:

means for issuing information that indicates the vertical and horizontal positions of said work table;

a tracing command controller for generating said tracing commands from selected tracing operation inputs and said position information, said tracing command controller being connected to said tracing milling machine controller and said position information issuing means;

an automatic tool changing means having a tool magazine for storing therein a plurality of cutting tools and a tool changing operating means for effecting the replacement of a cutting tool attached to said spindle by another cutting tool stored in said tool magazine at each tool changing time, said automatic tool changing means being attached to said machine body;

means for generating a signal indicating each of said tool changing times from said displacement amount signal issued by said tracer head, and;

a tool changing controller controlling the starting of a tool replacement operation of said automatic tool changing means in response to said tool changing time signal of said signal generating means.

4,268,950

POST-METAL ION IMPLANT PROGRAMMABLE MOS READ ONLY MEMORY

Pallab K. Chatterjee, Dallas, and Al F. Tasch, Jr., Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 5, 1978, Ser. No. 912,774

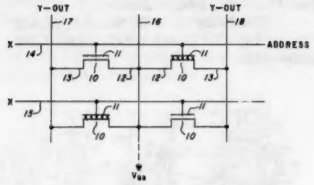
Int. Cl.³ B01J *17/00*

U.S. Cl. 29—571 **10 Claims**

1. A method of making a read-only-memory comprising the steps of:

forming a plurality of insulated gate field effect transistors in a face of a semiconductor body, each of said transistors having a source, a drain and a gate, said transistors being in a regular pattern to provide an array of memory cells; and programming the array of memory cells by masked ion implant through the gate and gate insulator into said

semiconductor body beneath selected ones of said transistors, laser annealing to activate said implanted ions, and



r.f. annealing to eliminate implant induced interface charge.

4,268,951

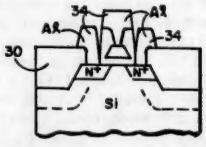
SUBMICRON SEMICONDUCTOR DEVICES

Michael T. Elliott, Cypress; Michael R. Splinter, Silverado; Addison B. Jones, Yorba Linda, and John P. Reekstin, Orange, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 13, 1978, Ser. No. 959,536

Int. Cl.³ B01J *17/00*

U.S. Cl. 29—571 **1 Claims**



1. A method of fabricating semiconductor devices having dimensions less than one micron, comprising the steps of

masking a suitable semiconductor substrate with etchant resist mask,

etching portions of the substrate in accordance with the pattern defined by the etchant resist mask,

implanting selected dopants into said substrate after masking,

growing an insulating layer onto the etched and implanted substrate,

further implanting the substrate in the region under said mask after removing the mask and after said growing step such that said substrate has dopants implanted therein at different depths,

growing a polycrystalline layer on said substrate after said further implanting step,

masking and etching said polycrystalline layer to leave a portion over said region,

additionally implanting said substrate using said polycrystalline portion as a mask to define self-aligned portions of a semiconductor device,

masking said additionally implanted substrate to define metallization patterns, and

metallizing said substrate to provide electrical contacts to selected portions thereof.

4,268,952

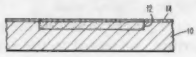
METHOD FOR FABRICATING SELF-ALIGNED HIGH RESOLUTION NON PLANAR DEVICES EMPLOYING LOW RESOLUTION REGISTRATION

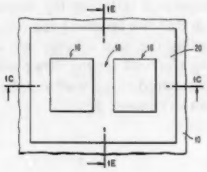
Fritz H. Gaensslen, Yorktown Heights, and Eberhard A. Spiller, Mt. Kisco, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 9, 1979, Ser. No. 28,461

Int. Cl.³ H01L *21/302*

U.S. Cl. 29—571 **5 Claims**





1. A method of fabricating structures containing high resolution conductive lines on a supporting substrate comprising the steps of:

applying a layer of resist material over a horizontal substrate at a first height level,

exposing patterns of selected regions of said resist material through a high resolution lithography mask,

etching said patterned layer of resist material and said substrate down to at least one other different height level wherein selected regions of said patterned resist material and said substrate material subtending said selected regions of said resist material are not etched due to said patterned exposure and remain at a said first height level wherein said first and at least one other different height levels are separated by vertical walls formed by said etching step, and the step of applying a layer of conductive material to said horizontal surfaces of said structure at said first and at least one other different height levels to produce conductive patterns, which are electrically isolated from each other by said vertical walls formed by said etching step and wherein said electrically isolated conductive patterns are electrically isolated by substantially zero distance separation in the horizontal direction to provide said high resolution.

4,268,953

METHOD OF MAKING AN ENCAPSULATED MAGNETIC-REED SWITCH CIRCUIT ELEMENT ADAPTED FOR USE IN INTERCONNECTED ARRAY

Roland G. Tetro, Bristol, Conn., assignor to Transamerica DeLaval Inc., Princeton, N.J.

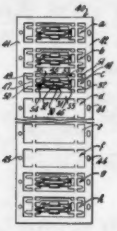
Division of Ser. No. 912,218, Jun. 5, 1978. This application Nov. 13, 1979, Ser. No. 93,177

Int. Cl.³ H01F *41/00;* **H01R** *43/00*

U.S. Cl. 29—602 R **5 Claims**

1. The method of making an encapsulated magnetic-reed switch circuit element adapted for use in interconnected array, which comprises selecting a blank of conductive sheet material, wherein the blank is a peripherally continuous elongate rectangular frame about an otherwise open lattice pattern of interconnected strips which are connected by a first severable-strip portion connecting the elongate sides of the frame near but spaced from one end of said frame and by a second severa-

ble-strip portion connecting the elongate sides of the frame near but spaced from the other end of the frame, there being two laterally spaced terminal-strip portions integral with and in cantilevered projection longitudinally from each of the first and second severable-strip portions toward but short of the adjacent end of the frame, there being a bus-strip portion near but laterally spaced from one of the elongate sides of the frame and integrally connecting the severable-strip portions at generally the alignment of the terminal-strip portions which are near the one elongate side of the frame, there being a mounting-strip portion integral with and in cantilevered projection from each of the first and second severable-strip portions and in the direction of the remote end of the frame and at generally the alignment of the terminal-strip portions which are near the other



elongate side of the frame, selecting a resistor element and electrically connecting the same to and between the mounting-strip portions and at lateral offset from the frame, selecting a glass-enclosed magnetic-reed switch element and electrically connecting the same to and between one of the mounting-strip portions and the bus-strip portion, embedding said switch element and said resistor element and their connections to said lattice in an elongate body of plastic potting material, wherein the body is in lateral clearance with adjacent elongate sides of the frame and is in longitudinal clearance with said first and second severable-strip portions, and severing each of said severable strip portions (a) between terminal-strip portions associated therewith and (b) between each terminal-strip portion and the adjacent elongate side of the frame.

4,268,954

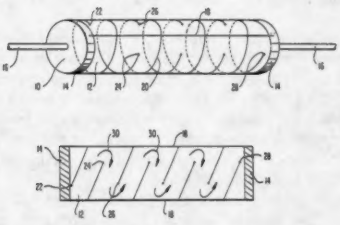
METHOD OF MAKING NON-INDUCTIVE CYLINDRICAL THIN FILM RESISTOR

D. Lamar Sease, Rouzerville, Pa.; Benjamin Solow, North Hollywood, Calif.; Eduard F. Boeckmann, Hagerstown, and David Rabinow, Rockville, both of Md., assignors to Angstrohm Precision Incorporated, Hagerstown, Md.

Division of Ser. No. 809,469, Jun. 23, 1977, Pat. No. 4,159,459. This application Mar. 2, 1979, Ser. No. 17,158

Int. Cl.³ H01C *17/06*

U.S. Cl. 29—620 **19 Claims**



1. A method of making a low-inductance electrical device comprising the steps of:

(a) depositing a resistive film on a generally cylindrical, insulating substrate; and

(b) forming said resistive film into a serpentine current path by cutting through the film substantially longitudinally to the axis of the substrate and also cutting through the film in the form of an interrupted spiral.

4,268,955

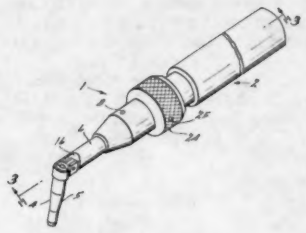
CONTACT INSERTION AND REMOVAL TOOL

William A. Daniels, Birmingham, Mich., assignor to Daniels Manufacturing Corp., Bloomfield Hills, Mich.

Continuation of Ser. No. 835,057, Sep. 21, 1977, abandoned. This application Mar. 22, 1979, Ser. No. 22,908

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—747 **10 Claims**



1. A manually operable tool for handling contacts in electrical connectors, comprising: an elongated handle housing having means for manually gripping and supporting the tool; a movable member longitudinally slidable in said housing; opposed parallel jaws affixed to the forward extremities of said member and said housing, respectively, said jaws having opposing, concave faces; spring means biasing said movable member with respect to said housing in a direction tending to close said jaws; and a collar surrounding said housing and being movable with respect thereto, said collar being connected to said movable member for manually moving said movable member relative to said housing.

4,268,956

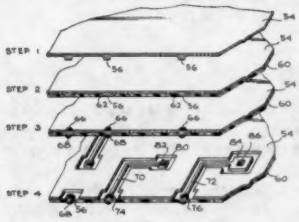
METHOD OF FABRICATING AN INTERCONNECTION CABLE

Howard L. Parks, Woodland Hills, and John M. Kuronen, Camarillo, both of Calif., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Division of Ser. No. 841,917, Oct. 13, 1977, Pat. No. 4,184,729. This application Mar. 15, 1979, Ser. No. 20,714

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—869 **2 Claims**



1. A method of fabricating an interconnection cable including the steps of:

forming a laminate structure comprised of flexible layers of electrically-insulative and electrically-conductive material;

removing selective portions of said layer of electrically-conductive material to define an electrically continuous

ground plane and one or more circuit paths each physically spaced and electrically-isolated from said ground plane and from each other circuit path;

removing selected portions of said layer of electrically-insulative material to expose the bottom surface of said circuit paths; and

depositing ductile electrically-conductive material on the top surface of said circuit paths and on the exposed bottom surface of said circuit paths.

4,268,957

PROCESS FOR SPLICING A COAXIAL CABLE WITH A CONDUCTOR COMPOSED OF INDIVIDUALLY ENAMELED WIRE STRANDS TO A COAXIAL CONNECTOR

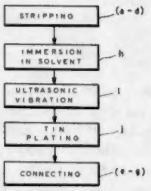
Anes Sbuelz, Milan, Italy, assignor to Italtel S.p.A., Milan, Italy

Filed Feb. 21, 1979, Ser. No. 13,230

Claims priority, application Italy, Feb. 21, 1978, 20426 A/78

Int. Cl.³ H01R *43/04*

U.S. Cl. 29—871 **5 Claims**



1. A process for splicing a coaxial cable to a coaxial connector, said cable having an inner and an outer conductor at least one of which is composed of individually enameled wire strands, a first layer of insulation separating said conductors, and a second layer of insulation surrounding said outer conductor, comprising the steps of:

(I) stripping away parts of said first and second layers to expose a tip of said inner conductor and a portion of said outer conductor, set back from said tip, on a cable extremity to be spliced;

(II) immersing said cable extremity in a solvent for the enamel covering said wire strands;

(III) removing the dissolved enamel by subjecting said cable extremity to ultrasonic vibration in a bath;

(IV) immersing said extremity in a chemical tin-plating solution; and

(V) thereafter joining said tip of said inner conductor and said portion of said outer conductor to corresponding conductors of said connector.

4,268,958

APPARATUS AND METHOD FOR COUNTING THE NUMBER OF SHAVES FOR WHICH A RAZOR BLADE IS USED

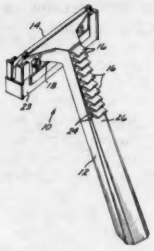
Ray Hilbert, 2085 Daisy Ave., Long Beach, Calif. 90806

Filed Nov. 1, 1979, Ser. No. 90,281

Int. Cl.³ B26B *21/00*

U.S. Cl. 30—34 A **2 Claims**

1. In a disposable razor having molded plastic handle with front and back surfaces and a blade holder within which a razor blade is captured, the improvement comprising a plurality of separate, manually frangible, thin plastic tabs all having bases and cantilevered tips protruding outwardly from said back surface of said handle at a uniform sloping angle thereto away from said blade holder, and said tabs are arranged in a row along the back surface of said handle with sharp demarkations defined between said bases and said back surface of said handle.



4,268,959

PIPE CUTTER

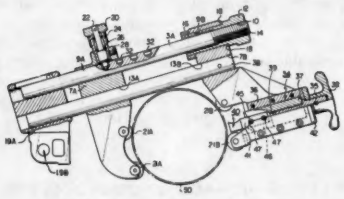
Tsuneo Taira, Nara, Japan, assignor to Rex Industries Co., Ltd., Osaka, Japan

Filed Feb. 22, 1979, Ser. No. 14,266

Claims priority, application Japan, Oct. 18, 1978, 53-142055[U]

Int. Cl.³ B23D *21/10*

U.S. Cl. 30—94 **2 Claims**



1. A pipe cutter comprising, in combination:

first and second support arms;

guide bar means receiving said support arms for relative sliding movement therebetween;

roller means on said support arms for engaging a pipe to be cut at at least three points around the periphery thereof;

a cutting bit carried by said first support arm for radial movement with respect to a pipe engaged by said roller means;

means operable to cause sliding movement of said first support arm with respect to said guide bar means;

and positioning means for said second support arm, comprising a plurality of aligned depressions spaced along said guide bar means and detent means carried by said second support arm for releasably engaging any one of the depressions to fix the position of said second support arm along said guide bar means,

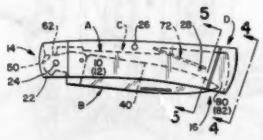
said detent means comprising a pin having a first end configured for reception in any of said depressions, means guiding said pin along an axis for movement toward and away from said guide bar means to enable insertion of said first end into and retraction of said first end from said depressions, means resiliently urging said pin towards said guide bar means, and means for manually actuating said pin away from said guide bar means.

4,268,960

KNIFE WITH BLADE LOCKING MECHANISM

Merwyn R. Reinschreiber, Lyndhurst, Ohio, assignor to Cole Consumer Products, Inc., Cleveland, Ohio

Filed Aug. 1, 1979, Ser. No. 62,671
Int. Cl.[3] B26B *1/00*
U.S. Cl. 30—161 7 Claims



1. A self locking knife construction comprising in combination:

a handle including a pair of laterally spaced apart parallel side portions secured in a fixed relationship to each other for defining an elongated knife blade receiving channel therebetween, said handle side portions having elongated top and bottom edges, front end portions, and rear edges extending transversely between said top and bottom edges;

a knife blade having an elongated cutting edge portion and a tang portion, said blade being pivotally mounted at said tang portion to said handle intermediate said front end portions of said handle side portions for allowing pivotal movement of said blade between an extended position having said cutting edge portion thereof exposed and a retracted position having said cutting edge portion thereof received in said channel, said tang portion including a locking notch therein for receiving a releasable locking member when said blade is in said expanded position for locking said blade against movement toward said retracted position;

an elongated rocker arm positioned intermediate said handle side portions to extend over at least a major portion of the length of said handle side portions along said top edges thereof to form a wall-like area between said handle side portions and thereby define a pocket for said blade cutting edge portion when said blade is in said retracted position, said rocker arm including a forward end having a locking member which lockingly engages said tang portion locking notch when said blade is pivotally moved to said extended position, said rocker arm including a rearward end portion positioned axially beyond said rear edges of said handle side portions and extending along said rear edges of said handle side portions between said top and bottom edges thereof;

said rocker arm being pivotally mounted to said handle on a rocker arm pivot axis located intermediate said front end portions of said handle side portions and said rear edges thereof for movement of said rocker arm forward end toward and away from said blade tang portion;

spring biasing means received in said pocket acting against said rocker arm rearwardly of said rocker arm pivot axis to continuously urge said locking member into engagement with said tang portion; and,

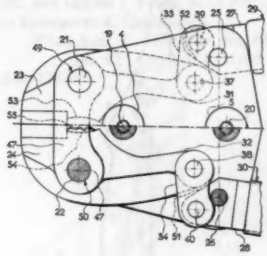
a handle end fixedly secured to said rocker arm rearward end portion adjacent said rear edges of said handle side portions, said handle end being selectively movable with said rocker arm rearward end portion relative to said rear edges of said handle side portions against the force of said spring biasing means to pivot said rocker arm about said rocker arm pivot axis and thereby move said locking member out of engagement with said locking notch for allowing movement of said blade from said extended to said retracted position.

4,268,961

CUTTING DEVICE IN PARTICULAR PIN CUTTING

Alfred Muller, Ottrott, and Jean-Paul Muller, Molsheim, both of France, assignors to J. Muller S.A., France

Filed May 15, 1979, Ser. No. 39,281
Claims priority, application France, May 17, 1978, 78 15170
Int. Cl.[3] B26B *17/00*
U.S. Cl. 30—191 6 Claims



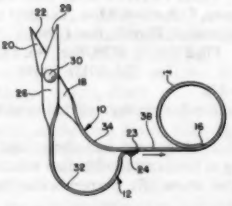
1. A cutting device, particularly a bolt cutting device comprising two parallel side plates spaced apart from one another, means rigidly connecting said side plates with one another, two cutting blades pivoted respectively around two fixed pins held by said side plates and having rear end portions extending rearwardly of said pivot pins, two lever arms pivoting respectively around two other fixed pins held by said side plates and having end portions extending forwardly of said latter pivot pins, pivot elements interposed between the rear ends of said cutting blades and the front ends of said lever arms respectively, said pivot elements being connected to the rear ends of said cutting blades and to the front ends of said lever arms by pivot pins having their longitudinal axes substantially perpendicular to the median axis of the cutting device, whereby a pull is exerted on each rear end of each cutting blade by said pivot elements upon movement of rear ends of said lever arms toward one another.

4,268,962

FINGER HELD SCISSORS

Joseph G. Doiron, Saugus, Calif., assignor to Donald Doiron, Saugus, Calif.

Filed Mar. 28, 1980, Ser. No. 135,208
Int. Cl.[3] B26B *13/00*
U.S. Cl. 30—261 9 Claims



1. A pair of scissors comprising a pair of lightweight steel ribbonlike members,

said members having cutting edges at corresponding ends and including a pivot pivoting said members together for the severing operation,

one member extending for relatively longer length and terminating in a finger hold,

the second being provided with an intermediate curve forming an arc extending away from the first named member, and terminating in a free end slidably associated with a midpoint area of the first member.

4,268,963

HAND TOOLS

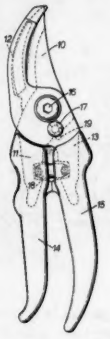
Christopher R. B. Harrison, Porthcawl, Wales, assignor to Wilkinson Sword, Ltd., Buckinghamshire, England

Filed Sep. 7, 1979, Ser. No. 73,443

Claims priority, application United Kingdom, Sep. 9, 1978, 36286/78

Int. Cl.[3] **B26B** *13/00*

U.S. Cl. 30—262 **3 Claims**



1. A hand tool comprising two cooperating members, two handles each secured to a separate one of said members, means interconnecting the members in mutually overlapping relationship to permit movement of the members relatively to one another by said handles, means defining an elongate slot in one of said members, the slot having a portion thereof which is enlarged in relation to the width of the remainder of the slot, a catch pin having a head portion of a size greater than said enlarged portion of the slot, a foot portion of a size to enable it to pass through the enlarged portion of the slot but not through the remainder of the slot and a shank portion interconnecting the head portion and foot portion and of a size to fit slidingly within the remainder of the slot, the catch pin being insertable into the slot before assembly of the tool, the other of said members having a recess in one edge thereof into which the catch pin can engage to lock the members against relative movement, the members in their assembled state overlapping to mask at least part of said enlarged portion of the slot and thereby prevent removal of the catch pin from the slot.

4,268,964

APPARATUS FOR CUTTING, TRIMMING AND EDGING VEGETATION AND THE LIKE

James R. Moore, Columbus, Miss., assignor to AMBAC Industries, Incorporated, Farmington, Conn.

Filed Jul. 2, 1979, Ser. No. 53,827

Int. Cl.[3] **A01D** *50/00*

U.S. Cl. 30—276 **7 Claims**

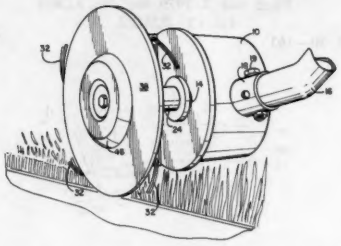
1. An apparatus for cutting vegetation and the like comprising:

a rotatable cutting head including attachment means for attaching at least one flexible flail which extends outward in a plane essentially perpendicular to the axis during rotation;

handle means providing hand grip means and supporting the rotatable cutting head spaced from the handle means to enable a user, while standing, to support the cutting head near the ground in selected attitudes including with its axis of rotation generally perpendicular to the ground,

a motor supported on the handle means remote from the hand grip so that its rotatable shaft and the cutting head which it supports and drives may be positioned selectively either generally parallel or perpendicular to the ground while held by the handle when the user is standing, and;

a shield formed so as to alternatively function as a wheel that is rotatably supported on the drive shaft outboard from the cutting head, spaced from and parallel to the plane of rotation of the flail, so that the shield is independent of the



rotation of the shaft and is functionable in supporting and positioning the cutting head when its axis of rotation is horizontal to the ground.

4,268,965

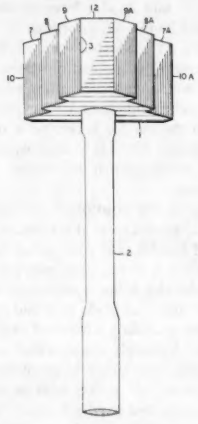
MASONRY CLEANING TOOL

Henry E. Askew, 1249 S. 50th St., Birmingham, Ala. 35222

Filed Feb. 27, 1980, Ser. No. 125,290

Int. Cl.[3] **B26B** *23/00*

U.S. Cl. 30—304 **1 Claim**



1. A hand-held tool for cleaning foreign matter from a rigid surface, said tool being comprised of a metal head with a handle of suitable material extending from the centroid of said head, with said head having on each end three short protuberances, or blades, with said blades arranged symmetrically so that each end mirrors the other end, the said blades being a long blade, then a medium length blade, then a short blade, with said blades being parallel to the length of said handle, and with the cutting edge of each said blade being formed with a chisel point.

4,268,966

RECIPROCATING SAW FOR TREE TOPPING

Franklin G. Williams, 1743 N. Valley View Dr., East Layton, Utah 84041

Filed Mar. 3, 1980, Ser. No. 126,642

Int. Cl.[3] **B27B** *11/00*

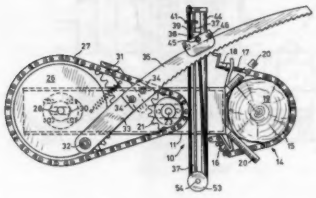
U.S. Cl. 30—372 **7 Claims**

1. An apparatus for topping trees, comprising in combination:

frame means having a horizontal and vertical elongate frame member attached together at the respective end perpendicularly of each other;

a power source detachably mounted on said frame means for providing rotationally directed power;

drive means attached to said frame means and said power source for receiving said rotational power and translating it into reciprocally directed power;



elongate saw blade means having a serrated side and a non-serrated side and being attached to said drive means at one end, so that said blade means can be reciprocated;

blade guide means slidingly attached to said blade means along the non-serrated side of the blade means;

biasing means attached to said blade guide means and said frame means for applying pressure to said blade guide means and transmitting that pressure against the non-serrated side of said blade means; and

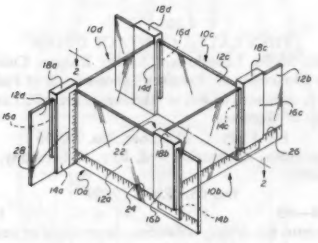
securing means for attaching said frame means to a tree.

4,268,967

PACKAGE SIZER

Lejo C. Brana, 7121 Cecil St., Houston, Tex. 77030, and John W. Scott, 1510 Johanna, Houston, Tex. 77055

Filed Sep. 14, 1979, Ser. No. 75,426
Int. Cl.³ G01B *5/00*
U.S. Cl. 33—1 V **7 Claims**



1. Package sizing apparatus comprising:

a first pair of wall members defining a first pair of generally opposed, substantially parallel, planar wall surfaces;

a second pair of wall members connected to said first pair of wall members and defining a second pair of generally opposed, substantially parallel, planar wall surfaces, said second pair of wall surfaces being contiguous and perpendicular to said first pair of wall surfaces, whereby said wall surfaces define a rectangular enclosure;

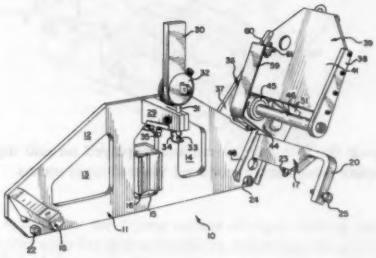
each of said wall members comprising a plate defining said wall surface, and further comprising connection means including a channel body rigidly adjoining one end of said plate and extending perpendicularly therefrom and having an open lower end and a closed upper end defining a slideway for receipt of the plate of one of the other wall members; whereby each of said wall members of each of said pairs is slidable toward and away from the other wall member of that pair to vary the dimensions of said rectangular enclosure.

4,268,968

RAILWAY WHEEL PROFILOMETER AND DIAMETER GAGE

Phillip G. Przybylinski, Schererville, Ind.; James J. Schuller, Crete, Ill., and Eugene I. Varda, Saint John, Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Aug. 20, 1979, Ser. No. 68,120
Int. Cl.³ G01B *5/20, 5/08*
U.S. Cl. 33—174 P **13 Claims**



1. A profilometer and wheel gaging device for recording the profile of the wheel tread of a vehicle wheel comprising:

a support structure adapted to be mounted on a single vehicle wheel engaging and positioned by the surface thereof,

tread follower means adapted to engage the wheel tread of said vehicle wheel,

a bracket member connected to said support structure,

mounting means for supporting said follower means on said bracket member for movement of said follower means transversely of said wheel tread whereby said follower means engages and follows the transverse contour of said wheel tread,

recording means on said bracket member, and

stylus means mounted on said mounting means for tracing the transverse contour of said wheel tread on said recording means in response to movement of the follower means following the transverse contour of said wheel tread.

4,268,969

UNIVERSAL PARALLEL RULER INCLUDING SCALE SETTING DEVICE

Masao Koenuma, Tokyo, Japan, assignor to Asahi Seimitsu Kabushiki Kaisha, Tokyo, Japan

Filed May 22, 1979, Ser. No. 41,420
Claims priority, application Japan, May 30, 1978, 53-65212; Sep. 18, 1978, 53-114360; Feb. 20, 1979, 54-18764
Int. Cl.³ B43L *13/08*
U.S. Cl. 33—438 **12 Claims**

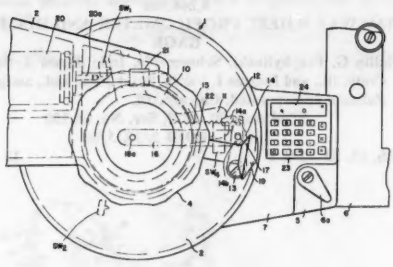
1. A device for angular setting a preset member in a universal parallel ruler, a scale rotating into contact with said preset member, said device comprising:

input means for introducing a given first angular amount by which said scale is to be set, said first angular amount representing a new position for said preset member;

digital display means for displaying said first angular amount which has been introduced via said input means;

drive means responsive to actuation of said input means for rotating said preset member by a second angular amount; and

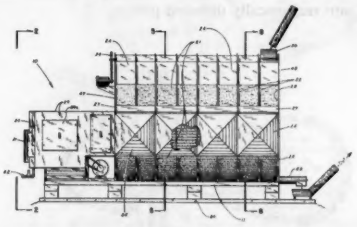
locking means for locking said scale when said second angular amount of the rotated preset member substantially



equals the first angular amount displayed on said digital display means and introduced via said input means.

recirculation means for selectively directing at least some of the heated air that has passed through the grain back to the inlet of the air circulation means; and

means for selectively directly connecting the second zone of the plenum chamber to the inlet of the air circulation



means for causing ambient air to be drawn through a second portion of the air flow means for cooling the grain when said connecting means is open and causing the air in the second zone to be forced through said second portion of the grain when said connecting means is closed.

4,268,970
Patent Not Issued For This Number

4,268,971

OPTIMUM LOW PROFILE CONTINUOUS CROSSFLOW GRAIN DRYING AND CONDITIONING METHOD AND APPARATUS

Ronald T. Noyes, 901 Eastwood Dr.; Gregory A. Lynch, 1256 N. John, and Eugene E. Williams, 1009 Given St., all of, Frankfort, Ind. 46041

Filed Oct. 9, 1979, Ser. No. 82,812
Int. Cl.[3] F26B *3/04*
U.S. Cl. 34—34 **29 Claims**

1. Apparatus for drying and conditioning grain comprising:

wall means including an upper portion, a lower portion and an intermediate portion between the upper and lower portions, for containing and guiding grain downwardly by gravity from the upper portion to the lower portion;

air flow means connected to said wall means for permitting air to pass through the grain as such grain moves downwardly;

a plenum chamber in communication with said air flow means;

plenum divider means for separating said plenum chamber into a first zone and a second zone;

air circulation means, including an inlet and an outlet, for causing air movement;

means for connecting the outlet of the air circulation means to the first zone of the plenum chamber whereby said first zone is pressurized and air is thereby forced through a first portion of the air flow means for drying the grain;

means for heating the air being forced into said first zone of the plenum chamber;

4,268,972

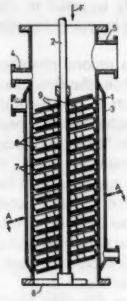
THIN LAYER CONTACT DRIER

Hans-Heinz Mölls, Leverkusen; Vaclav Kaspar, Cologne, and Asterios Moutsokapas, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 6, 1979, Ser. No. 73,046
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1978, 2840481
Int. Cl.[3] F26B *19/00*
U.S. Cl. 34—60 **11 Claims**

1. Apparatus for drying solutions, dispersions or suspensions comprising an elongated drying chamber, a heating jacket therearound for heating the internal surface of the chamber, a feed device, a discharge device for dried product and a vapour outlet, and rotatable means in the chamber comprising an axially disposed rotatable shaft, at least one annular set of distributor elements and means mounting the distributor elements between several parallel planes for permitting free movement between these planes in the annular space between the shaft and the internal surface of the chamber and for permitting vertical travel of the product to be dried from plane to plane, wherein the planes are non-perpendicular to the axial shaft and the outermost set of distributor elements at least partly touch the internal surface of the chamber and all of the distributor elements are set into motion both vertically and angularly relative to the internal surface of the chamber in response to the rotation of the shaft such that the paths of the points of contact of the edges of the distributor elements of adjacent planes touching or overlapping each other, whereby

the free movement of the distributing elements and the vertical travel of the product permitted by said mounting means effects



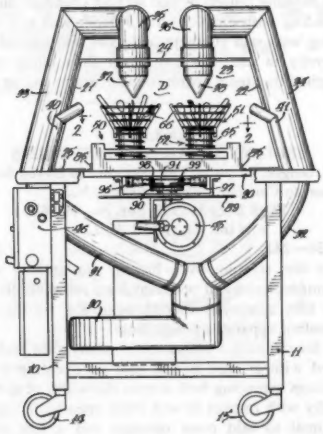
a secondary effect of preventing formation of lumps during drying.

4,268,973

SILVERWARE DRYER

Arthur D. Jezuit, Wood Dale, and Edwin J. Geu, Norridge, both of Ill., assignors to Hooper, Inc., Elmhurst, Ill.

Filed Sep. 24, 1979, Ser. No. 78,571
Int. Cl.[3] F26B *11/18*
U.S. Cl. 34—69 16 Claims



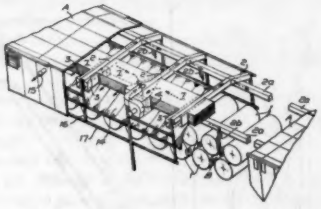
1. A silverware dryer comprising, a casing having means for directing air to a drying chamber, a portable basket positionable in said drying chamber, a vibratory holder for silverware mounted on said basket for rotational and up and down movement, flexible means mounting said holder to said basket for relatively free vibration, and motor-driven means for rotating and vibrating said holder with a snap action.

4,268,974

HOODS FOR THE CYLINDER DRYING SECTION OF PAPER MAKING MACHINES AND OTHER CYLINDER DRYING MACHINES

Donald Price, Turton, England, assignor to Greenbank-Cast Basalt Engineering Co. Limited, Lancaster, England

Continuation of Ser. No. 893,819, Apr. 5, 1978, abandoned. This application Feb. 29, 1980, Ser. No. 125,771
Claims priority, application United Kingdom, Apr. 5, 1977, 14424/77
Int. Cl.[3] F26B *13/08*
U.S. Cl. 34—86 1 Claim



1. A hood for the drying section of paper making machines and other cylinder drying machines, consisting of a plurality of end to end, interconnected sections or modules, each section being self contained and comprising: an enclosed structure; an inclined diaphragm wall dividing said enclosed structure into two chambers, these being a heater chamber and a cylinder chamber; a centrally arranged supply fan located in the heater chamber; a pair of air inlet duct means located one to each side of said supply fan for receiving air from outside said section; a pair of elongate, honeycombed air to air heat exchangers interposed between a respective inlet duct means and said supply fan whereby air is directed from said inlet ducts through said air to air heat exchangers to said supply fan; a steam heated battery located directly upstream of said supply fan, in between said pair of heat exchangers and said supply fan, for heating the inlet air; a framework of supporting ducts for supporting said section and for directing heated air downstream and from said supply fan to said cylinder chamber; nozzles at the ends of said supporting duct means for discharging heated air into the machines to dry the paper passing therethrough; damper valve means in said diaphragm wall for directing exhaust air from said cylinder chamber to said heater chamber; and an exhaust fan in said heater chamber, said heat exchangers being positioned between said damper means and exhaust fan so that exhaust air is drawn over and through said heat exchangers to thereby heat inlet air passing through said heat exchangers, said heat exchangers, inlet fan and battery all being located within said heater chamber and thus segregated from said cylinder chamber.

4,268,975

APPARATUS FOR PRE-HEATING THERMOPLASTIC PARISONS

Wayne E. Schall; John E. Miller, both of Toledo, and John F. Gabriel, Sylvania, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 28, 1980, Ser. No. 116,327
Int. Cl.[3] F26B *13/12*
U.S. Cl. 34—105 7 Claims

1. Apparatus for thermally pre-conditioning generally cylindrical thermoplastic parisons for introduction into a blow molding machine, comprising, in combination:

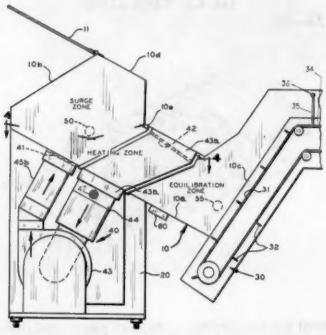
(1) an enclosed hopper having an inclined bottom floor, generally vertical side walls and a top wall, said floor

having sufficient inclination to produce bodily displacement of randomly positioned parisons by gravity from the upper end to the lower end thereof,

(2) said hopper having a parison receiving opening adjacent the upper end of the inclined floor,

(3) a parison conveyor movable upwardly past the lower most end of said floor to convey parisons upwardly out of said hopper,

(4) means for producing a stream of heated air,



(5) means for directing said heated air around said parison from the inclined floor to the top wall of the hopper thereby defining a heating zone,

(6) means for controlling the temperature of said heated air entering the hopper to maintain same uniform, and

(7) said hopper defining a space intermediate said heating zone and said parison conveyor constituting a temperature equalization zone, whereby all parisons removed by the conveyor have all portions thereof preheated to substantially equal temperatures.

4,268,976

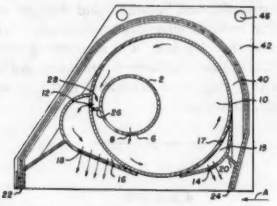
STEAM DISTRIBUTION APPARATUS

Norman F. Dove, 3187 Hoskins Rd., North Vancouver, B.C., Canada (3TJ 3B5)

Continuation-in-part of Ser. No. 924,639, Jul. 14, 1978, abandoned. This application Jul. 23, 1980, Ser. No. 171,482

Int. Cl.[3] **D21F** *5/00*

U.S. Cl. 34—155 **9 Claims**



1. A steam distribution apparatus comprising:

a header having means defining an inlet for steam and means defining a first plurality of discrete outlets for steam arranged along the header, the outlets increasing in size with the distance from the inlet;

means defining a first chamber surrounding the header to receive steam from the outlets in said header;

means defining first, relatively large outlets in said first chamber;

the relative positions of the header and the first chamber ensuring that, in use, steam leaving said plurality of outlets in the header impinges on the interior of the chamer and must travel around the chamber to reach the first outlets in the first chamber, the exterior of the header being relatively close to that part of the first chamber containing the first outlets so as to form a restricted zone immediately before said outlets to assist in obtaining uniform steam pressure along the length of the steam distribution apparatus;

means for defining a second chamber communicating with said first outlets from the first chamber;

means defining outlets in said second chamber; and

a shrouding positionable above a paper web and communicating with said outlets in said second chamber whereby, in use, uniform steam flow along the entire length of the steam distribution apparatus can be achieved.

9. A steam distribution apparatus comprising:

a header having means defining an inlet for steam and means defining a first plurality of discrete outlets for steam arranged along the header, the outlets increasing in size with distance from the inlet;

means defining a first chamber surrounding the header to receive steam from the outlets in said header;

means defining first, relatively large outlets in said first chamber;

the relative positions of the header and the first chamber ensuring that, in use, steam leaving said plurality of outlets in the header impinges on the interior of the first chamber and must travel around the first chamber to reach the first outlets in the first chamber;

means defining a second chamber communicating with said first outlets from the first chamber, said second chamber being divided into compartments;

a plurality of pipes each having an inlet communicating with said first chamber and an outlet communicating with a compartment in said second chamber, each said pipe extending outwardly from said first chamber and then returning through said first chamber to a compartment in said second chamber;

a valve in each pipe to regulate steam flow through the pipe;

means defining outlets in said second chamber; and

a shrouding positionable above a paper web and communicating with said elongate outlets in said second chamber whereby in use, uniform steam flow along the entire length of the steam distribution apparatus can be achieved.

4,268,977

SEALING APPARATUS FOR OVENS

Joseph T. Geiger, Houston, Tex., assignor to Exxon Research & Engineering Company, Florham Park, N.J.

Filed Dec. 3, 1979, Ser. No. 99,665

Int. Cl.[3] **F26B** *25/12*

U.S. Cl. 34—242 **20 Claims**

1. In a film treating oven having substantially wide and narrow entrance and exit openings for a substantially continuous thin film conveyed therethrough for treatment therewithin, sealing apparatus comprising:

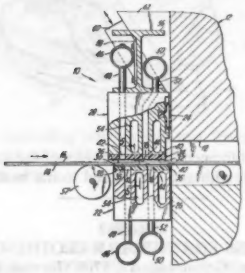
means for defining a substantially narrow slit sealingly engaged with at least one of said oven entrance and exit openings extending both across the width of and longitudinally with respect to said oven opening having an end proximal to said oven opening and a free end distal thereto, said slit being dimensioned such that the film is conveyable therethrough into or out of said oven, said slit defining means including upper and lower sealing members sealingly engaged to and extending transversely over said oven opening and having upper and lower, opposed, substantially parallel slit defining surfaces, respectively;

eductor means fluidly communicating with said slit in an area adjacent to the distal end thereof for educing gases present in said slit;

buffer means fluidly communicating with said slit in an area between said area wherein said eductor means communi-

cates with said slit and the proximal end thereof for introducing an inert gas into said slit; and

means for selectively adjusting the position of at least one of said upper and lower sealing members to adjust the height of said slit, at least one of said sealing members being sealingly engaged to said oven openings by a flexible seal,



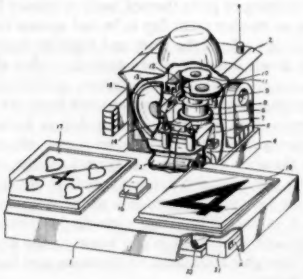
whereby gases leaking from the oven through the openings thereof are prevented from reaching the atmosphere external of said oven through the action of one or both of the flow of inert gas and ambient atmosphere exterior of said oven into said eductor means while the ambient atmosphere is prevented from entering the oven.

4,268,978

AUTOMATIC SOUND-EMITTED SELF-LEARNING TOY

Lin P. Houn, No. 6, Lane 107, Sec. 1, Tzu Yen Rd., Shih Pai, Peitou, Taipei, Taiwan

Filed Jun. 21, 1979, Ser. No. 50,632
Int. Cl.[3] **G09B** *3/00*
U.S. Cl. 434—330 **1 Claim**



1. An automatic sound-emitting self-learning toy comprising:

a base;

a movable figure supported on said base, said figure having two movable arms disposed thereon;

a plurality of question cards which are insertable within said base, magnets being disposed on said question cards;

a plurality of answer cards insertable within said base, magnets being disposed on said answer cards;

a plurality of parallel horizontal beams disposed within said base, said beams having a plurality of holes at both ends wherein a plurality of cylindrically shaped magnets are disposed;

a movable pad disposed on said base, said pad having a triangular flange connected thereto, said flange being in mechanical connection with a first movable arm which traverses said beams along their first ends;

a biasing means for forcing said first arm in a first direction;

a second movable arm positioned perpendicular to said beams and lying across their second ends;

a third movable arm positioned abutting said second ends of said beams;

a biasing means forcing said third movable arm in said first direction;

an electrical switching means in mechanical connection with said second movable arm;

a means for electronically interpreting a magnetic recording, said means being in electrical contact with said switching means;

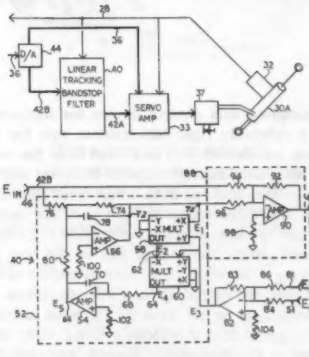
a magnetic recording tape held within said means for electronically interpreting, said tape having an affirmative and a negative response recorded thereon, said toy being comprised such that when a question card and an answer card are inserted in said base, said answer card corresponding to said question card, and said pad is depressed, said switching means activates said means for electronically interpreting and an affirmative response is emitted.

4,268,979

METHOD AND APPARATUS TO EXTEND THE BANDWIDTH OF BUFFETING IN FLIGHT SIMULATORS

George E. Minnich, Vestal, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Filed Aug. 17, 1978, Ser. No. 934,352
Int. Cl.[2] **G09B** *9/08*
U.S. Cl. 434—46 **7 Claims**



1. Apparatus for modifying a command signal to produce a drive signal for controlling a drivable physical element having a frequency variable resonance characteristic comprising:

(a) control input means for providing a control signal representative of a monitored variable physical condition of said drivable physical element; and

(b) band-stop filter means having a center frequency corresponding to the frequency of said variable resonance characteristic, comprising

(1) band-pass filter means for providing a band-pass function on said command signal to produce an output pass band signal, including inverting means such that said output pass band signal is opposite in polarity to said command signal, and multiplying feedback means, responsive to said control signal, for feeding back a portion of said output pass band signal multiplied by said control signal,

whereby the center frequency of said band-pass circuit means varies in accordance with said control signal and

(2) summing means for summing said output pass band signal with said command signal to produce said drive signal.

6. A method for modifying a command signal to produce a drive signal for controlling a drivable physical element having a frequency variable response characteristic, comprising the steps of:

(a) providing a control signal representative of a monitored variable physical condition of said drivable physical element;

(b) providing a band-pass filter having a multiplying feedback means responsive to said control signal, and inverting means for inverting in polarity a signal applied thereto;

(c) applying said command signal to said band-pass filter to produce a pass band output signal;

(d) applying said control signal to said band-pass filter to vary the center frequency of said band-pass filter in accordance with said control signals; and

(e) summing said pass band output signal with said command signal to produce said drive signal.

4,268,980

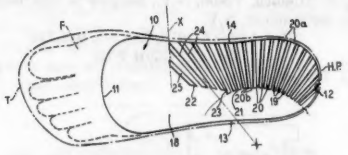
DETORQUING HEEL CONTROL DEVICE FOR FOOTWEAR

Charles J. Gudas, Lockport, Ill., assignor to Scholl, Inc., Chicago, Ill.

Filed Nov. 6, 1978, Ser. No. 958,208

Int. Cl.³ A43B *13/38, 19/00, 21/32*

U.S. Cl. 36—43 **19 Claims**



1. A detorquing heel control device for footwear which comprises a relatively rigid but resilient sole for footwear having a sole member shaped to extend from the rear of the heel to the metatarsal headrest area of footwear and having a smooth top surface inclined from a thin front edge to a transverse varus heel ridge followed by a heel cup and inclined upwardly from the lateral to the medial side and extending at the high level around the medial side of the heel cup, said member having a flat solid lateral bottom surface at the initial heel impact zone and extending forwardly therefrom with ribs radiating medially in an arc from the flat solid lateral bottom separated by grooves and widening along their lengths to terminal ends at the medial side thereof, and said ribs being positioned to successively flatten and shift forwardly as they are loaded to rotate the member laterally for decreasing pronation of the foot during the normal gait of a wearer of the footwear.

4,268,981

ICE SKATING FOOTWEAR

Icaro Olivieri, Montebelluna, Italy, assignor to Icesij A.G., Vaduz, Liechtenstein

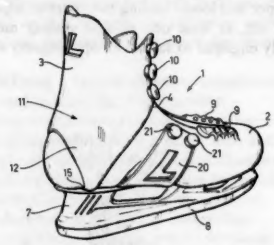
Filed Jun. 7, 1979, Ser. No. 46,204

Claims priority, application Switzerland, Jun. 28, 1978, 7034/78

Int. Cl.³ A43B *15/16*

U.S. Cl. 36—115 **10 Claims**

1. Ice skating footwear comprising a shoe having a neck, a hull, a sole and a heel, and a legging at the neck of the hull, characterized in that the legging extends downwardly on



opposite sides of the neck along the sides of the hull in substantial contact therewith and is attached to the heel.

4,268,982

SEAM PRESS FOR TUBULAR CLOTHING PARTS

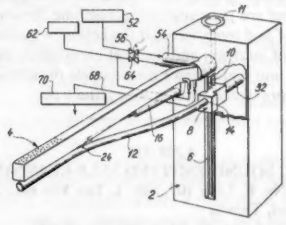
Holger Andersen, Grönnegade 11, 8700 Horsens, Denmark

Filed Nov. 2, 1978, Ser. No. 957,042

Claims priority, application United Kingdom, Nov. 2, 1977, 45654/77

Int. Cl.³ D06F *71/40*

U.S. Cl. 38—12 **14 Claims**



1. A method of steam pressing the seam areas of tubular articles of clothing or parts thereof, such as trouser legs, of the type having an interior seam flap to be laid against the inside of the fabric to one side of the seam and fixed by steam pressing in this laid down position, characterized in that the tubular clothing in a right or non-turned position is introduced onto a narrow pressing beam and is manipulated from the outside in such a manner that the interior seam flap as backed by the pressing beam is caused to be laid down to one side as required, whereafter the seam area is forced against a surface portion of the beam by the operator causing a pull to be exerted in a portion of the clothing part opposite to the seam area, and the seam area is subjected to steam pressing by means of steam supplied through a channel in the beam to the inside of the seam area through perforations in the seam area backing portion of the beam.

4,268,983

SECURITY LABEL

Jack E. Cook, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

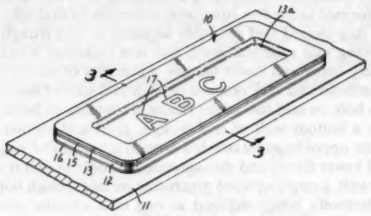
Filed Dec. 26, 1978, Ser. No. 973,734

Int. Cl.³ G09F *3/02*

U.S. Cl. 40—2.2 **12 Claims**

1. Transfer-inhibiting label comprising a handleable support sheet and a fragile easily tearable heat-softenable film adhered to the support sheet; said film having a sensible component extending over the area of the film, and a portion of the film extending beyond at least one edge of the support sheet and

carrying an adhesive layer by which the extending portion may be adhered to an article to which the label is applied,



whereby the extending portion will tear from the rest of the film and remain adhered to the article upon removal of the label from the article.

4,268,984

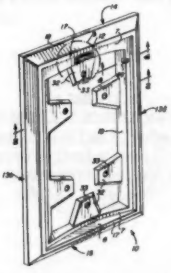
SIGN ASSEMBLY

Warren A. Taylor, 4025 - 11th Ave. South, Minneapolis, Minn. 55407

Continuation-in-part of Ser. No. 836,381, Sep. 26, 1977, abandoned. This application Sep. 4, 1979, Ser. No. 71,848

Int. Cl.³ A47G *1/06*; G09F *1/12*

U.S. Cl. 40—154 **19 Claims**



1. A front loading multi-sided sign frame assembly for a flexible sign element, comprising:

a plurality of frame portions disposed in a multi-sided manner, two of said frame portions being spaced opposite to each other and each having a first sign engaging surface and a second sign engaging surface contiguous to said first sign engaging surface and inclined with respect thereto, said second sign engaging surface being inclined inwardly with respect to the plane of the sign frame assembly whereby a flexible sign element slightly wider than the distance between the first sign engaging surfaces of said opposed frame portions, when inserted from the front of the frame, is maintained in an inwardly bowed position when engaging the first sign engaging surfaces and overlies the second sign engaging surfaces, at least one of said second sign engaging surfaces having a recess therein which is normally covered by the sign element, said recess being exposed upon deflection of said sign element inwardly in sliding engagement with the second sign engaging surfaces to cause the edges of the sign element normally in abutment with the first sign engaging surfaces to be withdrawn from engagement with at least the one of said first sign engagement surfaces adjacent said recess so as to expose said recess to enable the engagement of the rear of the sign element to provide for the removal thereof.

4,268,985

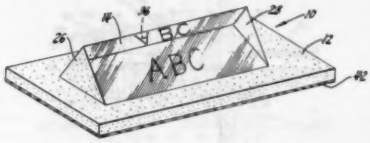
DESK NAME PLATE

Joseph F. Lecznar, 26837 Lyndon, Redford, Mich. 48239

Continuation-in-part of Ser. No. 912,425, Jun. 5, 1978, abandoned. This application May 5, 1980, Ser. No. 146,751

Int. Cl.³ G09F *13/12*

U.S. Cl. 40—219 **1 Claim**



1. A desk name plate, comprising:

base means including a glass mirror having an upper surface and an upwardly facing reflective surface spaced beneath the upper surface a distance corresponding to the thickness of the mirror;

a glass prism having a first face, and a second face, and a third face, the first face being disposed at a 90° angle with respect to the second face and a 45° angle with respect to the third face, said prism being disposed such that the third face thereof is parallel to and adjacent the upper surface of the mirror; and

an exhibit mounted on the first face of the prism so as to be viewable through the second face and to provide a first image and a second image of the exhibit, each of said images being viewable through the second face, the first image being upside down with respect to the exhibit and comprising a reflection of the exhibit from the third face of the prism, and the second image being right side up with respect to the exhibit and comprising a reflection of the exhibit from the reflective surface of the mirror.

4,268,986

IDENTIFICATION DEVICE

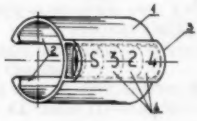
Ivana Piana, Genova-Cogoleto, Italy, assignor to Grafoplast S.A.S., Genova-Cogoleto, Italy

Filed Sep. 8, 1978, Ser. No. 940,860

Claims priority, application Italy, May 15, 1978, 12613 A/78

Int. Cl.³ G09F *3/06*

U.S. Cl. 40—316 **1 Claim**



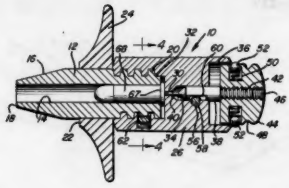
1. A device for affixing identification indicia to an object comprising a body portion, said body having a substantially rectangular plate portion and a pair of longitudinally aligned, substantially straight ribs disposed on one face of said plate portion, said ribs being enlarged at their ends distal to said plate and being operable to grip said object, and a channel defining portion disposed on the other face of and integral with said body portion, said channel defining portion being operable to receive said identification indicia, said body portion being composed of a first, hard, resilient plastic material and said channel defining portion being composed of a second, soft transparent plastic material.

4,268,987

HAND WEAPON FOR SURVIVAL PURPOSES

Charles Cash, Star Rte. Box 671, Kerrville, Tex. 78028

Filed Aug. 29, 1979, Ser. No. 70,426
Int. Cl.³ F41C *3/00*
U.S. Cl. 42—1 R **10 Claims**



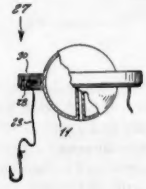
1. A hand weapon including an elongated tubular barrel having a longitudinal bore formed therethrough and front and rear ends through which said bore opens, an elongated breech body having a longitudinal firing pin bore formed therethrough having front and rear ends, the front end of said firing pin bore including an enlarged threaded counterbore, the rear end of said barrel being externally threaded and removably threaded into said counterbore, the rear end of said firing pin bore including a diametrically enlarged rear counterbore, an elongated abutment including front and rear ends, an elongated firing pin supported and projecting outwardly from one end of said abutment, said front end of said abutment projecting into and being sliding and guidingly received in said rear counterbore with said firing pin projecting into and being slidingly received within said firing pin bore, said abutment and portions of said breech portion defining said rear counterbore including coacting means spaced about said rear counterbore and abutment yeildingly resisting inward movement of said abutment further into said rear counterbore to a position with the forward end of said firing pin projecting through said firing pin bore and into said threaded counterbore, said coacting means including structure, in response to a forward thrust on said abutment relative to said breech portion in excess of a predetermined amount to allow forward movement of said abutment relative to said breech portion in a "snap action" for sharply impacting the forward end of said firing pin with a primer of a cartridge shell seated in said threaded counterbore.

4,268,988

2 IN 1 BOBBER SUPER AND REGULAR

Clarence Johnson, Jr. II, P.O. Box 43, 730 Hoffman Ave., Bellport, Long Island, N.Y. 11713

Filed Mar. 8, 1979, Ser. No. 18,563
Int. Cl.³ A01K *93/00, 91/04*
U.S. Cl. 43—43.11 **1 Claim**



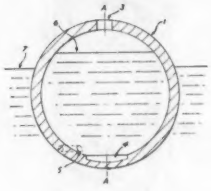
1. A "2 in 1" floater, comprising, in combination, a spherical bobber consisting of a hollow shell around a sealed air chamber therewithin, a tubular portion vertically through a center of said bobber, a fishing line extending through said tubular portion, a bead along said line being located above said bobber, a first sinker along said line being located immediately below said bobber, a lower end of said line extending downwardly from said first sinker, a terminal lower end of said line having a second sinker and supporting a plurality of lower hooks; a trough formed around an equatorial outer side of said spherical shell, a ring-shaped reel rotatably adjusted in said trough and surrounding said spherical shell, said reel including a radially outwardly upper and lower flanges, a plurality of second lines wound around said reel, one end of each said second line being tied in a hole on said reel upper flange, a plurality of holes also through a bottom wall of said trough, each said second line having its opposite end extended around a peripheral edge of said reel lower flange and through one said hole in said trough bottom wall, a single upward protrusion on said trough bottom wall selectively being engaged in one of a circular row of upward indentations around said reel lower flange, and a ring-shaped cover screw-threaded to a vertical, outer peripheral wall of said trough, retaining said reel in said trough and against said protrusion, and a fish hook on said opposite end of each said second line.

4,268,989

BUOYANT DEVICE WITH MEANS FOR PRODUCING THRUST

David J. Wickham, 13 Conway Rd., Chippenham, Wilts., England

Filed Dec. 26, 1978, Ser. No. 972,871
Int. Cl.³ A63H *23/04, 23/10*
U.S. Cl. 46—92 **6 Claims**



1. A floatable device comprising a body of a generally convex shape formed with a cavity defined by an outer shell of bouyant material, said shell being provided with means such that the body will float in water stably wherein said cavity is filled with water, said means being a recess at the bottom of the inner surface of said shell, the cavity having an upper relatively large, continuously open aperture opposite said recess and a lower aperture forming a restrictive flow passage between the cavity and the underwater level when the body is floating in water, said passage being oriented to produce a thrust component for causing the floating body to rotate in the water when the internal water level in the cavity is higher than the external water level, the buoyancy being such as to cause the floating body to rise progressively in the water as water in the cavity flows out through said lower aperture so as to tend to maintain a head of water in the cavity above the external water level.

4,268,990

TOY ACTIVATING MECHANISM

James F. Kubiatowicz, Minneapolis, Minn., assignor to Custom Concepts, Incorporated, Minneapolis, Minn.

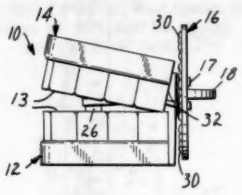
Filed Jan. 30, 1979, Ser. No. 7,712
Int. Cl.³ A63H *11/00*
U.S. Cl. 46—119 **8 Claims**

1. A toy activating mechanism adapted to be operated by a common rubber band, said mechanism comprising:

a first portion including a wall having an opening and an annular friction surface around said opening, and a fixed post spaced from the side of said wall opposite said fric-

tion surface adapted to engage portions of a said rubber band with other portions of said rubber band extending through said opening;

a rotor having tabs adapted to retain portions of a said rubber band thereabout for assembly of said rotor to said first portion adjacent said wall, said rotor being shaped to position the parts of said rubber band adjacent said retained portions against said friction surface to restrict



rotation of said rotor relative to said first portion under the influence of wound portions of said rubber band between said post and said rotor;

a second portion;

means for mounting said first and second portions to one another for relative pivotal movement about an axis; and

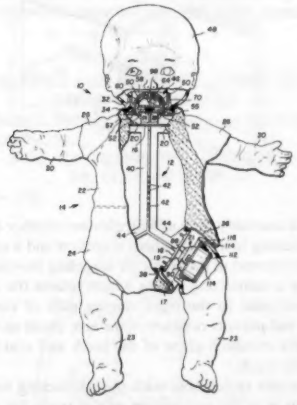
cam means on said rotor and said second portion for causing relative pivotal motion between said portions upon rotation of said rotor.

4,268,991

SOFT FLEXIBLE ARTICULATED DOLL

John Cotey, Haddonfield, and Lee S. Volpe, Collingswood, both of N.J., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Feb. 9, 1979, Ser. No. 10,826
Int. Cl.³ A63H *3/46*
U.S. Cl. 46—163 **22 Claims**



1. An articulated doll comprising:

a skeleton having at least one terminal end;

a body mounted on the skeleton and supported thereby;

an appendage separate from the body and coupled to the skeleton; and

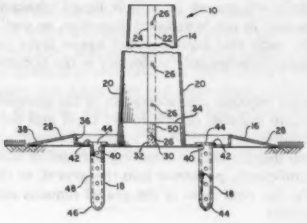
means interposed between the appendage and the terminal end of the skeleton for joining the appendage directly to the terminal end for rotational movement of the appendage relative to the skeleton and body.

4,268,992

TREE PROTECTOR

Raymond J. Scharf, Sr., Rte. 5, Box 41D, Poplar Bluff, Mo. 63901

Filed Mar. 28, 1979, Ser. No. 24,563
Int. Cl.³ A01G *13/10*
U.S. Cl. 47—23 **1 Claim**



1. A tree protector comprising:

(a) a vertical, hollow shaft including a pair of substantially identical, half-round overlappingly connectible sections,

(b) a separate annular ground-engaging base including a pair of substantially identical, half-round, overlappingly connectible sections, said base including an annular trough disposed for use above the ground having substantially vertical inner and outer sides and interfitted with said shaft at said inner side, a pair of circumferentially spaced openings disposed in said trough and said base including an inwardly and upwardly inclined substantially planar peripheral portion adapted to lie above the ground disposed adjacent said trough and having a ground-engaging rim to facilitate use with uneven ground, said inclined peripheral portion extending between said ground-engaging rim and said trough outer side at a relatively small angle of inclination to permit lawn mower wheels to ride thereupon, and

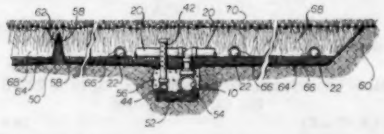
(c) a pair of hollow, hold-down spikes, each including a flanged upper end defining an opening for receiving liquid, a pointed lower end for driving the spike into the ground, and a plurality of side openings disposed between said upper and lower ends for dispensing liquid into the adjacent ground, said spikes being received by said trough openings and said flanged upper end being engageable with the bottom of the trough and said trough sides being higher than said spike upper end openings whereby liquid in said trough is received within said spike upper end openings.

4,268,993

GRASS SPORTS SURFACES AND A METHOD FOR MAINTAINING THEM

Percy C. Cunningham, 3545 Wellington Crescent, N. Vancouver, B.C. V7R 3B3, Canada

Filed May 18, 1979, Ser. No. 40,194
Int. Cl.³ E02B *11/00*; A01G *31/00*
U.S. Cl. 47—58 **28 Claims**



1. A system for growing and sustaining a grass playing field, comprising:

a graded subsoil base;

liquid impervious means supported by said subsoil base to form a subsurface liquid reservoir;

an upper layer of primarily sand-containing particulate material in which grass may be anchored and supported for growth and in which liquid characteristically moves primarily in the vertical direction; and

a lower layer of particulate material located substantially adjacent said upper layer, between said upper layer and said liquid impervious means, said lower layer consisting essentially of gravel in which liquid characteristically moves well in the horizontal direction, as well as downwardly, such that liquid in said lower layer tends to be distributed substantially uniformly in the horizontal direction,

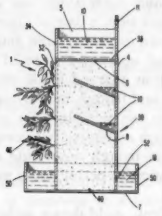
wherein the physical characteristics of the essentially gravel particulate material of said lower layer and the primarily sand-containing particulate material of said upper layer are such that the sand-containing particulate material does not significantly penetrate into the gravel, so that, consequently, the void ratio of the gravel remains substantially unimpaired.

4,268,994

THREE-DIMENSIONAL PLANTER

Muneharu Urai, 3-419-3, Takagi, Higashiyamatoshi Tokyo, Japan

Filed Dec. 29, 1978, Ser. No. 974,561
Claims priority, application Japan, Dec. 27, 1977, 52-175178
Int. Cl.³ A01G *9/02*
U.S. Cl. 47—79 **27 Claims**



1. A three-dimensional planter, comprising:

(a) a cultivation body;

(b) a vertically disposed frame for holding said cultivation body, at least one vertical wall of said frame having a substantially unobstructed opening providing a vertically disposed planting surface on said cultivation body, the area of said opening being greater than one-half the area of said one vertical wall;

(c) a liquid reservoir formed by said frame above and proximate said cultivation body;

(d) means for restrictively conducting liquid from said reservoir to said cultivation body;

(e) means for retention and distribution of liquid within said cultivation body; and

(f) a liquid collection trough secured to the bottom of said frame for collecting excess liquid from said cultivation body.

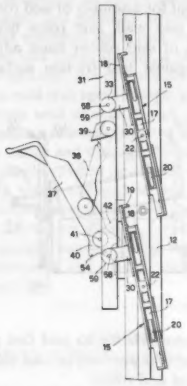
4,268,995

WINDOW FRAMES HAVING SWINGABLE BLIND-SLATS

Genesio Villa, Via Ariosto 215, Sesto San Giovanni (Milan), Italy

Filed Apr. 10, 1979, Ser. No. 28,882
Claims priority, application Italy, Apr. 13, 1978, 22290 A/78
Int. Cl.³ E06B *7/086*
U.S. Cl. 49—87 **24 Claims**

1. A swingable-slat window of the type including a window frame, a plurality of slat carriers pivotally mounted at intermediate points on said window frame, a control rod disposed parallel to one side of said window frame and having a pivotal connection with each of said slat carriers, a control lever pivotally mounted on said window frame adjacent said control rod, a connecting rod having one end pivotally connected to said control rod and the opposite end pivotally connected to said control lever for positioning said control rod in accordance with the position of said control lever; characterized in that said control lever has means fixedly forming a part thereof in resilient snapping engagement with means on said window frame.

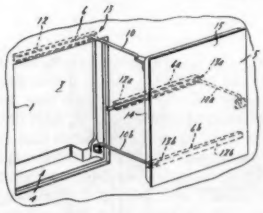


4,268,996

TRACK FOR SLIDING CLOSURE

Denis L. C. Allen, Chelmsford, England, assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 1, 1979, Ser. No. 80,607
Claims priority, application United Kingdom, Nov. 15, 1978, 44683/78
Int. Cl.³ E05D *15/10*
U.S. Cl. 49—212 **15 Claims**



1. A track assembly for a sliding closure member comprising a track extending in a longitudinal direction and a support arm mounted at one end in the track for traveling movement along the track by a connecting means which retains the arm generally perpendicular to the track during part of the traveling movement and permits rotation of the arm about an axis perendicular to the common plane of the track and arm in one end region of the track,

control means engageable with the connecting means when the arm is in the end region of the track for effecting a rolling movement of the arm along the track in the said common plane, the control means for effecting the rolling movement of the arm comprising a rack which is fixed relative to the track at least when the connecting means is in the end region of the track, the rack being engageable with a pinion portion of the connecting means, the connecting means comprising a ball roller mounted on the arm for rolling movement along the track when the arm is generally perpendicular to the track while permitting

rotation of the connecting means about the axis perpendicular to the common plane of the arm and the track, and holding means engageable with the connecting means to prevent such rotation when the connecting means is not positioned in the end region of the track.

4,268,997

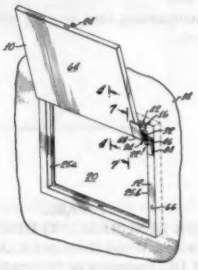
COMPARTMENT DOOR HOLDER FOR RECREATIONAL VEHICLES

Walter J. Conkey, 3821 Ferntower, West Covina, Calif. 91792

Filed Jun. 18, 1979, Ser. No. 49,424

Int. Cl.³ E06B *7/16*

U.S. Cl. 49—383 **13 Claims**



1. A door holder adapted to be removably attached to a pinless door hinge to hold a door in an open position, said hinge pivotally securing said door to a frame and having an axially extending end opening, said door holder comprising:

(a) door holding means for contacting radially opposed surfaces on said door and frame and holding said door in said open position when said door holder is attached to said hinge with said door in said open position, and

(b) an attachment member carried by said door holding means,

said attachment member having a rigid end portion projecting outwardly of said door holding means and having a cross-section and length of sufficiently small size for removable insertion into said hinge opening.

4,268,998

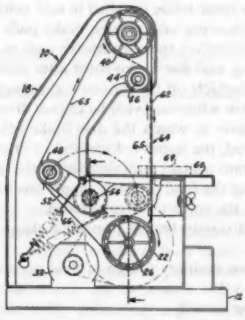
BELT SANDER FOR SANDING EXTERNAL AND INTERNAL SURFACES

John M. Hansen, Racine, Wis., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 10, 1980, Ser. No. 139,075

Int. Cl.³ B24B *21/16*

U.S. Cl. 51—148 **6 Claims**



1. In a belt sanding machine, a frame, a drive pulley and an idler pulley rotatably mounted on said frame in fixed, spaced relationship, an endless sander belt extending over said pulleys, a freely swinging arm having one end pivotally mounted on said frame, an idler drum mounted for rotation on the other end of said arm for engaging the inner surface of one run of said belt and to deflect and tension it in a direction away from the other belt run when said arm is rotated in one direction to a first position, and for engaging the outer surface of said one belt run and to deflect and tension it in a direction toward said other belt run when said arm is rotated in an opposite direction to a second position, said belt being of such length as to permit the engaged portion of said one belt run to be moved in close proximity with said other belt run when said arm is rotated to said second position, and means tensioning said belt in both positions of said freely swinging arm comprising over center acting spring means connected to said arm and said frame.

4,268,999

AUTOMATIC POLISHING APPARATUS

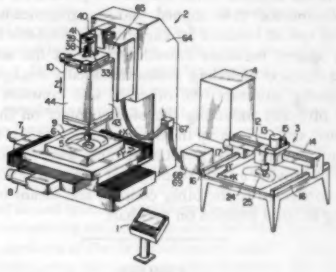
Koichi Noto, and Tsuneo Kawai, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 16, 1979, Ser. No. 39,600

Claims priority, application Japan, May 17, 1978, 53-57657; Jun. 28, 1978, 53-87962[U]

Int. Cl.³ B24B *49/12*

U.S. Cl. 51—165.72 **15 Claims**



1. An automatic polishing apparatus comprising, in combination:

a profiling device including a tracer adapted to automatically trace a line which has been drawn in a drawing to give a path of movement for a polishing tool in a plane defined by X and Y-axes, and detecting means for detecting the displacement of said tracer in the directions of the X and Y axes; and

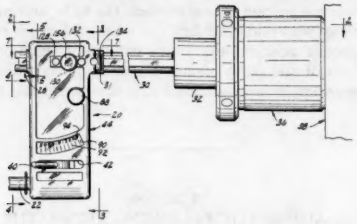
a polishing machine including feeding means adapted to feed one of a table mounting a workpiece to be ground and a polishing head body carrying a polishing tool relative to each other in the directions of the X and Y axes in accordance with signals derived from said detecting means of said profiling device and representing said displacements of said tracer in the directions of the X and Y-axes, a detector provided on said polishing head body for detecting one of a pressure applied to said polishing tool and a displacement caused by said pressure with respect to the workpiece, and polishing control means adapted to move one of said polishing head body and said table relative to each other in a direction of a Z-axis in accordance with an output signal derived from said detector so that a self-controlled profiling movement for polishing a three-dimensional curved surface is carried out under a substantially constant pressure of the polishing tool on a three-dimensional curved surface of the workpiece.

4,269,000

FIXTURE FOR ALIGNING AND LOCATING THE AXIS OF ROTATION OF A ROTATABLE MEMBER

Harold T. Rutter, Kirkwood, Mo., assignor to Sunnen Products Company, St. Louis, Mo.

Filed Oct. 4, 1979, Ser. No. 81,624
Int. Cl.[3] B24B *49/00*; G01B *5/24*
U.S. Cl. 51—165.74 **11 Claims**



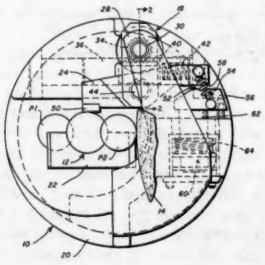
1. An alignment fixture for use in aligning the rotational axis of a rotatable member mounted on a device, the device having a shaft in spaced relation to the rotatable member comprising a housing structure having first and second end portions, means on one end portion for mounting the housing structure on the shaft, means adjacent to the second end portion for engaging a rotatable member to be aligned, said engaging means including a pair of spaced contacts for engaging the rotatable member at axially spaced locations therealong, one of the said pair of spaced contacts including means threadedly engageable with the housing structure, the other of said contacts including means pivotally mounting the other contact on the housing structure, scale means on the housing structure and a movable indicator having a first portion movable adjacent to the scale means to provide a scale reading and a second portion operatively connected to the other contact, and means to lock the housing in fixed position on the shaft.

4,269,001

WORK CLAMPING FIXTURE

Herbert G. Bottomley, Skipton, England, assignor to Landis Lund, Limited, Keighley, England

Filed Mar. 25, 1980, Ser. No. 133,714
Int. Cl.[3] B24B *5/42*
U.S. Cl. 51—237 CS **3 Claims**



1. A workholding fixture for clamping a workpiece for rotation about a selected axis comprising:

at least one throwblock for receiving a workpiece portion to be clamped,

a clamp arm associated with said throwblock including a jaw at one end and a control surface at the other end,

means for pivotally supporting said clamp arm intermediate said ends,

means for selectively displacing said pivotally supporting means along an arc from a predetermined advanced position to a predetermined retracted position,

means for pivotally displacing said clamp arm about said pivotally supporting means including

cylinder means having bearing surface means selectively displaceable from a retracted position to an advanced position,

said bearing surface means having a selected length to permit engagement with said control surface means as said pivotally supporting means and said bearing surface means are displaced between said advanced and retracted positions, and

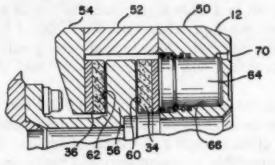
means for maintaining said bearing and control surfaces in engagement.

4,269,002

METHOD FOR RESURFACING DISC BRAKE ROTORS

Lawrence A. Venere, Wood Dale, and E. A. Domes, Carpentersville, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Jun. 4, 1979, Ser. No. 45,511
Int. Cl.[3] B24B *1/00, 23/02*
U.S. Cl. 51—281 SF **4 Claims**



1. In a self propelled vehicle supported on driven wheels driven through a drive train including an engine, a gear equipped transmission and a differential equipped axle, said vehicle having a service brake system including a disc brake rotor mounted for rotational movement on said axle and a disc brake caliper having service brake pads carried thereby adjacent said disc brake rotor and a fluid pressure supply line connected to said disc brake caliper, a method of resurfacing said disc brake rotor while installed in said vehicle comprising the steps of removing said service brake pads from said disc brake caliper, installing special abrasive pads in said disc brake caliper, rotating said disc brake rotor after raising said driven wheels of said vehicle off the ground and engaging said gear of said transmission while said vehicle engine drive said differential equipped axle to which the disc brake rotor to be resurfaced is attached, the improved method of urging said special abrasive pads into contact with said disc brake rotor comprises:

disconnecting the fluid pressure supply line to the disc brake caliper of the rotor to be resurfaced;

capping said supply line to prevent leakage of fluid under pressure;

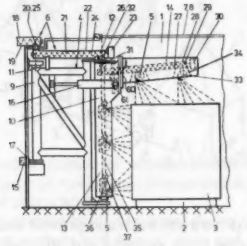
connecting an auxiliary source of fluid pressure, including a metering valve means, to the disc brake caliper of the rotor to be turned;

allowing metered flow from said auxiliary source of fluid pressure to said disc brake caliper to urge said special abrasive pads into contact with said disc brake rotor.

4,269,003
CENTRIFUGAL BLASTING MACHINE FOR LARGE WORKPIECES

Wolfgang Walter, Hallau, Switzerland, assignor to Georg Fischer Aktiengesellschaft, Switzerland

Filed Jun. 26, 1979, Ser. No. 52,182
Claims priority, application Switzerland, Jun. 29, 1979, 7083/78
Int. Cl.[3] B24C 3/04, 3/22
U.S. Cl. 51—421 11 Claims



1. A machine for centrifugal blasting of workpieces having large volumes or surface areas, the machine having a closed blasting chamber and means for fixedly or rotatably supporting a workpiece therein, and wherein the machine comprises

a first support bracket structure pivotally supported for movement about a first axis within the blasting chamber;

a second support bracket structure pivotally supported on said first bracket structure for movement about a second axis movable with said first structure, said second bracket structure having at least two angularly related carrier portions;

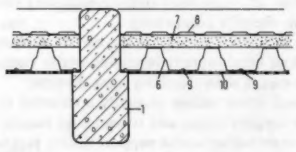
a plurality of blasting wheel units mounted on said angularly related carrier portions of said second bracket structure for propelling blasting medium toward the workpiece; and

means for feeding blasting medium to said blasting wheel units, said means including conveying conduits having substantially rigid portions extending to and between said first and second axes and swivel joints at said axes.

4,269,004
EXPLOSION-PROOF BUILDING

Cornelis J. M. Schiebroek, Parklaan 60, Eindhoven, Netherlands

Filed Aug. 9, 1978, Ser. No. 932,374
Claims priority, application Netherlands, Aug. 15, 1977, 7708979
Int. Cl.[3] E04H 9/00
U.S. Cl. 52—1 8 Claims



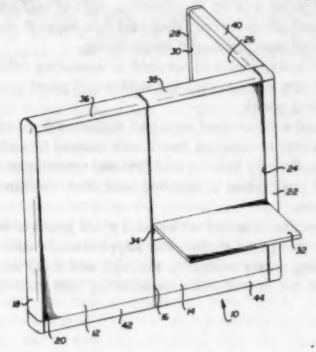
1. An explosion proof building comprising a wall and a roof, said wall comprising a plurality of horizontally spaced apart vertically extending structural load bearing members of concrete, and panel means in the spaces between said members, and

means for plastically deforming under tension when said building is subjected to an external explosion comprising elongated elements between said load bearing members, and having the ends thereof anchored, said elongated elements being pre-stressed steel wires, said panels abutting said elements, and being on the exterior thereof.

4,269,005
PANEL JOINING SYSTEM

Jay Timmons, Palos Verdes Estates, Calif., assignor to Hiebert, Inc., Torrance, Calif.

Filed Jun. 11, 1979, Ser. No. 47,027
Int. Cl.[3] E04B 2/78
U.S. Cl. 52—36 17 Claims

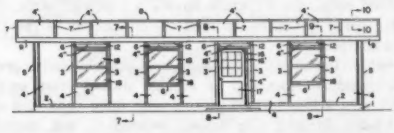


1. An arrangement for joining first and second panel members at facing portions thereof, the facing portions of each of the first and second panel members having a length extending between top and bottom portions of the panel, the arrangement comprising a first elongated member disposed between the facing portions of the first and second panel members, the first elongated member extending along at least a substantial portion of the length of each of the facing portions, a second elongated member disposed between the facing portions of the first and second panel members along a least a substantial portion of the length of each of the facing portions and generally parallel to and spaced-apart from the first elongated member, a top connecting element extending between and fastened to the top portions of the first and second panel members and a bottom connecting element extending between and fastened to the bottom portions of the first and second panel members.

4,269,006
HOUSE ASSEMBLY WITH PREFABRICATED ELEMENTS

Kenneth Larrow, 1300 Belcher Rd. So., Largo, Fla. 33543

Continuation of Ser. No. 855,986, Nov. 30, 1977, abandoned, which is a continuation-in-part of Ser. No. 723,809, Sep. 16, 1976, Pat. No. 4,071,984. This application Sep. 5, 1979, Ser. No. 72,360
Int. Cl.[3] E04C 1/00
U.S. Cl. 52—79.1 14 Claims



1. A component building system, comprising in combination:

a plurality of unitary panels each having an inner and an outer skin with insulation means secured therebetween;

said inner and outer skins extending beyond the terminal ends of said insulation means creating a panel groove about the perimeter of said panel;

a first support stud secured relative to the earth;

a first interpanel stud secured in extending relationship to said first support stud;

means for mounting a first of said plurality of panels with said panel groove on adjoining ends of said first panel at least partially receiving said first support stud and said first interpanel stud respectively;

a second interpanel stud secured in extending relationship to said first support stud and within said panel groove of said first panel;

means for mounting a second of said plurality of panels with said panel groove on adjoining ends of said second panel at least partially receiving said first support stud and said second interpanel stud respectively;

a third interpanel stud secured in extending relationship to said first support stud and within said panel groove of said second panel;

a second support stud mounted within said panel groove of said first and second panels and secured to said interpanel studs thereby locking said first and second panels between said stud while concealing said studs within said panel groove;

strap means disposed within said panel grooves for securing said interpanel stud to said support studs; and

fastening means extending through said strap means into at least one of said studs for securing said studs together.

4,269,007

VENT AND BAFFLES

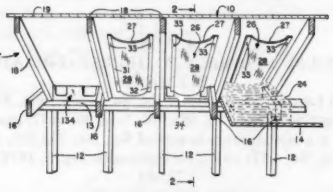
Bruce K. Ward, St. Louis Park, Minn., assignor to Insulation Sales Co., Minneapolis, Minn.

Division of Ser. No. 896,890, Apr. 17, 1978, which is a continuation-in-part of Ser. No. 834,322, Sep. 19, 1977, Pat. No. 4,125,971. This application Apr. 24, 1979, Ser. No. 32,879

The portion of the term of this patent subsequent to Nov. 21, 1995, has been disclaimed.

Int. Cl.[3] E04B 7/02

U.S. Cl. 52—92 **18 Claims**



1. A vent and baffle for providing an air passage between the soffit and attic of a structure having a top wall plate, roof rafters, ceiling joists, and a roof cover secured to the roof rafters comprising:

a vent having an elongated body, said body having opposite longitudinal sides and an arcuate shaped cross section forming a longitudinal groove with open ends, and outwardly directed side flanges secured to and extended along said opposite sides of the body;

a baffle having a top arcuate recess and side pockets for accommodating a transverse portion of the body and side flanges, said baffle having a bottom portion engageable with the top wall plate whereby the baffle holds the side flanges of the vent in engagement with the roof cover so that the groove of the body forms with the roof cover an air passage between the soffit and attic.

4,269,008

DEVICE TO KEEP BIRDS FROM ALIGHTING ON BUILDINGS

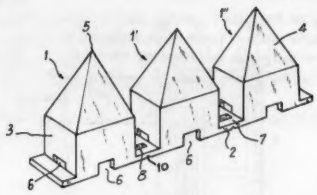
David Assouline, 103 Ave. Philippe Auguste, 75011 Paris, France

Filed Nov. 19, 1979, Ser. No. 95,442

Claims priority, application France, Nov. 20, 1978, 78 32679

Int. Cl.[3] E04B 1/72

U.S. Cl. 52—101 **6 Claims**



1. Device to drive away birds and prevent them from alighting and nesting on roofs, cornices and other surfaces of buildings, edifices, parts of constructions or the like, comprising a series of shaped elements extending vertically and each having a pointed summit, on a support base, each said shaped element comprising a polyhedron with transparent lateral faces, able to give a prism effect and which come together at the summit in the form of a sharp point.

4,269,009

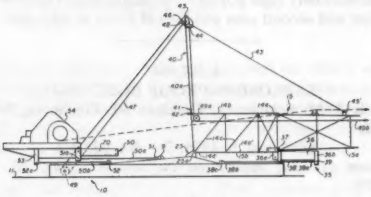
LOW LIFT, ELEVATABLE HIGH FLOOR DRILLING MAST AND SUBSTRUCTURE ARRANGEMENT THEREFOR

Larry K. Lawrence, Houston, Tex., assignor to Pyramid Manufacturing Company, Houston, Tex.

Filed Aug. 29, 1979, Ser. No. 70,894

Int. Cl.[3] B66C 23/06

U.S. Cl. 52—116 **10 Claims**



1. A low lift, high floor drilling mast and substructure arrangement therefor comprising:

a. base means for resting on the earth's surface;

b. drilling mast support means pivotally connected to said base means with a drilling mast thereon;

c. setback tower means pivotally connected to said drilling mast support means and to said base means;

d. elevatable drawworks support means pivotally mounted on said base means with drawworks means thereon;

e. means to secure said drilling mast support means to said base means when in upright position thereon;

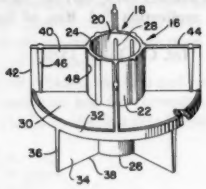
f. lifting frame means connected to said drilling mast support means whereby said drilling mast means, support means therefor and setback tower means may be simultaneously elevated from a reclined position to an upright position on said base means; and

g. means to secure said lifting frame means in an erect position adjacent the upright mast support means.

4,269,010
MULTI FIN POST ANCHOR SYSTEM

Carl R. Glass, 1036 Partin Dr., Kissimmee, Fla. 32741

Filed Nov. 21, 1979, Ser. No. 96,267
Int. Cl.³ E04N 12/20
U.S. Cl. 52—154 3 Claims



1. A post anchor formed of non-metallic material for use with an elongated post having a portion embedded in the earth, the post anchor comprising:

a main sleeve portion having an inner sleeve surface and an outer sleeve surface, and having a top end and a bottom end;

a series of radially spaced, elongated, inwardly projecting, vertical splines on the inner sleeve surface;

a substantially flat horizontal disc member extending from the outer sleeve surface at a midlength location between the top and bottom ends of the sleeve;

the disc member having a peripheral vertical flange extending about the perimeter thereof;

a plurality of lower radial fin members extending from the outer sleeve surface, the fin members having outer edges coextensive with the flange, and lower edges coextensive with the bottom end of the main sleeve portions;

a plurality of upper radial fin members extending from the outer sleeve surface, at locations intermediate the locations of the lower fin members, the upper fin members having vertical edges coextensive with the flange, and upper edges coextensive with the top of the main sleeve, the upper fins having rigidifying vertical braces incorporated therein adjacent the vertical edges thereof;

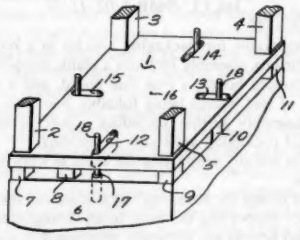
strengthening ribs on the outer sleeve surface extending from the disc members to the top of the main sleeve portions;

the post anchors being adapted to be engaged on the portion of the post embedded in the earth with the vertical splines and frictional engagement therewith such that the fins resist lateral movement in the earth of the post.

4,269,011
EARTHQUAKE GUARDING SYSTEM

Aristarchos S. Ikonomou, 90 Evrow St., Athens 609, Greece

Filed Jun. 8, 1979, Ser. No. 46,760
Int. Cl.³ E02D 27/34
U.S. Cl. 52—167 3 Claims



1. In a structure having a superstructure and at least one load distributing base supporting said superstructure, the connections between said structure and the earth being essentially a support means and a connecting means, said support means transferring to the ground the load of the structure in a first direction from said load distributing base, said support means providing elastic resistance to movement of the structure in all directions perpendicular to said first direction so that said support means is able to follow dynamic movements of the ground in said perpendicular directions without transferring great forces from the ground to said base in said perpendicular directions, said structure being provided with peripheral clearance from the ground in said perpendicular directions so that said base can move a predetermined distance through said clearance relative to the ground in said perpendicular directions,

said connecting means being connected respectively to said base and to the ground in a said perpendicular direction, said connecting means being sufficiently strong to substantially prevent movement of said structure under forces in said perpendicular directions less than a predetermined magnitude but sufficiently weak to abruptly disconnect the connection between the ground and the base immediately upon being subject to a force of said predetermined magnitude when said base has moved a small proportion of said predetermined distance in said perpendicular direction, thereby removing the restraint against movement of the structure in said perpendicular direction by removing the transmission of forces in said perpendicular direction through said connecting means so that the load of said structure remains supported on said support means which thereafter provides the only essential connection to the ground, said support means having sufficient elastic stiffness in said perpendicular direction to apply restoring forces to said sturcture and to safely transfer loads in said perpendicular direction from the structure to the ground, after said connecting means has disconnected, thereby permitting the structure to move relative to the ground in said perpendicular direction through said peripheral clearance against the elastic resistance of said support means and in accordance with abruptly changed dynamic characteristics and to withstand said dynamic movements of the ground;

the improvement in which said connecting means comprises an elongated bar connected to said load distributing base and to the ground, the long dimension of said bar extending in said first direction, said bar being subjected to shear forces during relative movement between said base and the ground and being constructed and arranged to break in shear when subjected to said force of predetermined magnitude, and in which there is an elongated slot in said base having a width approximately the same as said bar, which receives said bar, whereby movement of said base relative to said bar can occur along the length of said slot.

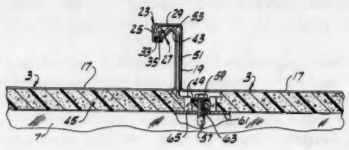
4,269,012
STANDING SEAM ROOF, PANEL THEREFOR, AND METHOD OF INSTALLATION

John A. Mattingly, St. Louis, and Hasmukh S. Mehta, Manchester, both of Mo., assignors to The Binkley Company, Warrenton, Mo.

Filed Feb. 1, 1979, Ser. No. 8,434
Int. Cl.³ E04D 3/362
U.S. Cl. 52—394 12 Claims

1. An elongate sheet metal panel for a standing seam roof having a web adapted to bear on panel supporting means of a roof and first and second flanges both extending up from the web at opposite sides of the web, said panel being adapted to be mounted on said supporting means adjacent another panel with the webs of the panels bearing on said supporting means, with said flanges standing up from said supporting means, and with the outside of the first flange of one panel alongside the outside of the second flange of the other, the first flange of the panel having an integral downwardly opening channel section ex-

tending longitudinally along its upper margin on the outside thereof, said channel section being provided with sealing means therein before assembly with another panel on said supporting means, said second flange having an integral sealing lip section extending longitudinally along its upper margin on the inside thereof adapted to fit in the channel section of an adjacent panel on said supporting means and sealingly engageable with the sealing means in the latter channel section to form a sealed standing seam, the channel section comprising an upper web extending laterally outwardly from the first flange at the upper edge of the first flange, and an outer flange extending down from the upper web at the outer edge of the upper web, the sealing means extending along said outer flange of said channel section, said lip section of the panel having an outer edge portion engageable with the sealing means of the channel section of the adjacent panel, said channel section further comprising a lower lip extending laterally inwardly from the outer flange of the channel section at the lower edge of said outer flange, said sealing means comprising a strip of flexible resilient material adhered to the inside of said outer flange between said upper web and said lower lip and facing toward the first flange of the panel.



4,269,013

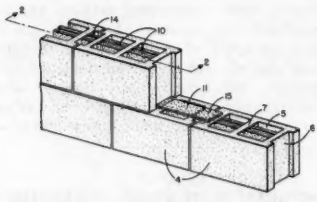
INSULATED BUILDING BLOCK WALL CONSTRUCTION

Earl L. West, 17990 Ixonia Ave. West, Lakeville, Minn. 55044

Filed Apr. 26, 1979, Ser. No. 33,793

Int. Cl.³ E04B *2/00*

U.S. Cl. 52—405 **3 Claims**



1. In combination with a plurality of masonry building blocks having cavities formed therein and having masonry divider webs interposed between adjacent cavities,

insulating barrier panels inserted into each cavity and constructed to define a cap-receiving groove in the upper portion thereof,

a cap element with a portion thereof extending above each cavity and extending horizontally beyond each cavity to overlie a portion of each web and form with adjacent cap portions, a continuous barrier strip between adjacent rows of blocks while providing an insulating barrier within each block cavity,

said cap element having a portion adapted to extend downward into the groove to produce a sealing retaining fit with the respective upper edges of said cavity barrier panels.

4,269,014

PROCESS FOR FASTENING A BONDING AND SEALING DEVICE TO CONSTRUCTION COMPONENTS AND/OR BUILDINGS BY FORCING INJECTION MATERIAL INTO CRACKS, FLAWS, AND THE LIKE

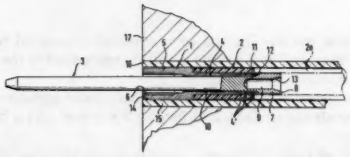
Werner Grammerstorf, Munich, Fed. Rep. of Germany, assignor to IPA Bauchemie GmbH, Egling, Fed. Rep. of Germany

Filed Jul. 31, 1979, Ser. No. 62,348

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1978, 2833546

Int. Cl.³ E04D *15/00*

U.S. Cl. 52—749 **9 Claims**



1. A device for fastening a bonding and sealing device in a drilled hole by forcing injection material into cracks or flaws of construction parts or buildings comprising:

an elongated sleeve;

a sealing bushing of an elastic material, said bushing encasing at least a portion of said sleeve and being radially expandable from the inside thereof; and

pull pin means arranged within said sleeve for expanding from the inside at least a portion of the length of said sleeve encased by said sealing bushing, said sealing bushing being sealingly clamped between the wall of said drilled hole and the encased portion of said sleeve;

said pull pin means including a shank, and a head adapted to be torn off, said head of said pull pin means including a coaxial blind hole extending into the end of said pull pin means toward the shank thereof.

4,269,015

APPARATUS FOR PACKAGING ARTICLES IN A WIRE-BOUND BOX ASSEMBLY

Quentin T. Woods, San Jose; Paul H. Becker, Saratoga, and William D. Gerverdinck, San Jose, all of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Jun. 14, 1979, Ser. No. 48,415

Int. Cl.³ B65B *5/02, 11/02*

U.S. Cl. 53—526 **7 Claims**

1. An apparatus for packaging articles in a box assembly, wherein the box assembly includes a blank comprised of a top board, a bottom board, a first side board, and a second side board, all of said boards being foldably bound to each other, the box assembly further including a pair of separate end boards, said packaging apparatus comprising:

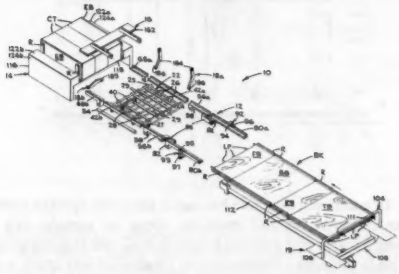
means for initially supporting the blank in a horizontal orientation;

platform means for receiving the articles and the end boards and for supporting the same in an arrangement such that the end boards are vertically positioned in a spaced relationship enclosing said articles and in a preassembled configuration suitable for placement on the bottom board of the blank;

means for moving said platform means with the end boards and articles thereon to a drop position directly above and aligned with the bottom board of the blank on said blank supporting means and for thereafter moving said platform means away from said bottom board along a horizontal path which is parallel to the blank;

means for selectively engaging the articles and end boards on said platform means as said platform means is moved in said horizontal path to strip the articles and end boards from said platform means and cause them to drop onto the bottom board of the blank;

means for upwardly folding the first and second side boards into vertical positions and for thereafter folding the top board downwardly to the first side board and into a horizontal position to encompass the articles and end boards within the folded blank; and



means positioned above said folding means for pressing the end boards against the articles as the end boards and articles are supported on said platform means in said drop position directly above and aligned with the bottom board of the blank and for continuing to press the end boards against the articles in said preassembled configuration as they drop onto the bottom board and thereafter until the first and second side boards and said top board have been folded around said end boards by said folding means, whereby the free edges of the top board and first side board can be secured together to complete the assembly of a box with the articles packaged within.

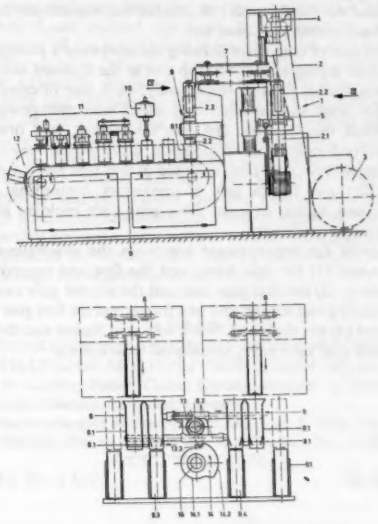
4,269,016

PLURAL LINE BAG FORMING AND FILLING APPARATUS

Josef Kopp, Griesheim; Ernst Hüther, Darmstadt, and Ernst Bohländer, Ueberau, all of Fed. Rep. of Germany, assignors to Zupack-Gesellschaft mbH, Darmstadt, Fed. Rep. of Germany

Filed Dec. 1, 1978, Ser. No. 966,131
Int. Cl.³ B65B *9/08*
U.S. Cl. 53—546 **4 Claims**

1. In a packaging apparatus, a combination comprising a pair of packaging machines arranged side-by-side and each including a tube station in which a web of packaging material is withdrawn from a supply roll and shaped into a tube, a bag-forming station in which the tube is subdivided into tube sections which are converted into bags, a filling station in which a product is filled into the bags, a sealing station in which the filled bags are sealed, and a delivery station, said stations in respective machines being arranged sequentially; a conveyor extending along all of said stations and having two side-by-side pairs of conveyor tracks; means for delivering bags from each of said bag-forming stations alternately to the respective tracks of an associated one of said pairs of tracks, said means comprising two intermediate magazines, one in each of said machines, displaceable in timed movements transversely of the conveyor elongation, each magazine receiving bags individually from the respective bag-forming station and alternately displacing the formed bags towards the respective conveyor track; means for transferring bags at the respective bag-forming station to a respective one of said intermediate magazines; and means for



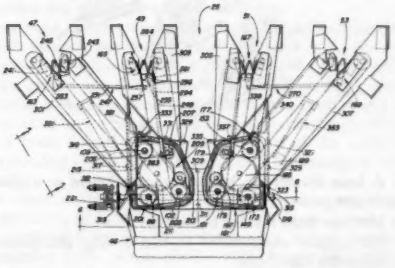
transferring bags from the intermediate magazines to the respective conveyor track.

4,269,017

HARVESTER HEADER WITH A MAIN FRAME OF MODULAR SUBFRAMES

Harold E. deBuhr, and Henry W. Suechting, both of Ottumwa, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Sep. 11, 1979, Ser. No. 74,575
Int. Cl.³ A01D *45/02*
U.S. Cl. 56—106 **7 Claims**



1. In a header for a row crop harvester having a crop receiving throat, said header comprising:

a rear attachment frame couplable to said harvester;

first and second sealed gear cases attached together and attached to said rear frame;

first and second row unit frames attached to and extending generally fore-and-aft from said first gear case;

third and fourth row units frames attached to, and extending generally fore-and-aft from, said second gear case;

first and second pairs of conveyors attached to and extend-

ing generally fore-and-aft between (1) the forward ends, respectively, of said first and second row unit frames, respectively, and (2) said first gear case;

third and fourth pairs of conveyors attached to and extending generally fore-and-aft between (1) the forward ends of said third and fourth row unit frames, respectively and (2) said second gear case; and

each pair of conveyors defining therebetween a passageway with a crop entry and crop exit at the forward and rearward ends thereof, respectively, each pair of conveyors for conveying severed crop along said passageway defined therebetween and into said throat, said first and second conveyors comprising drive means having an input drive gear train enclosed in said first gear case, said third and fourth pair of conveyors comprising drive means having an input drive gear train enclosed in said second gear case;

wherein the improvement comprises the attachments between (1) the rear frame and the first and second gear cases, (2) the first gear case and the second gear case, (3) the first and second row unit frames and the first gear case, and (4) the third and fourth row unit frames and the second gear case being mechanical attachments.

4,269,018

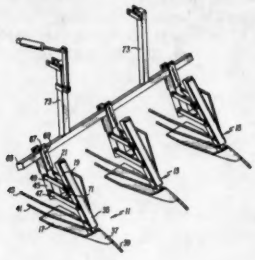
BEAN DIVIDER

John P. Pickett, Rte. 1, Murtaugh, Id. 83344

Filed Oct. 2, 1979, Ser. No. 81,157

Int. Cl.³ A01D *45/02, 63/00*

U.S. Cl. 56—119 **5 Claims**



1. A bean divider mechanism for attachment to a drawing vehicle comprising

at least one bean divider including a shoe;

a first support bar secured to said divider and extending upwardly therefrom;

at least one substantially vertical bar;

means for pivotally securing said vertical bar to said driving vehicle;

a substantially horizontal bar secured to the lower end of said vertical bar;

a second support bar secured to said horizontal bar and subtending therefrom at a predetermined angle α from the vertical;

means for pivotally supporting said first support bar relative to said second support bar, said first support bar being at an angle θ to the vertical greater than said angle α.

4,269,019

TEDDING ATTACHMENT FOR ROTARY HARVESTING MOWER

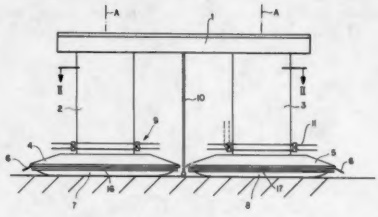
Gerhard Strobel, Ehingen, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Gottmadingen, Fed. Rep. of Germany

Filed Jun. 22, 1979, Ser. No. 51,220

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1978, 2827786

Int. Cl.³ A01D *57/30*

U.S. Cl. 56—192 **14 Claims**



1. In a mowing machine having at least one upright mowing drum centered on and rotatable about an upright axis and having a lower end provided with at least one radially projecting blade defining a blade orbit on rotation of said drum, a crop spreader comprising:

a ring surrounding said drum above said blade and having a pair of ends;

means for tightening said ring to said drum for joint rotation therewith; and

at least one set of radially extending tines having inner ends clamped between said ends of said ring above said blade for joint rotation therewith and with said drum.

4,269,020

MEANS FOR IMPELLING GRASS CLIPPINGS IN A ROTARY-SCYTHE GRASS MOWER

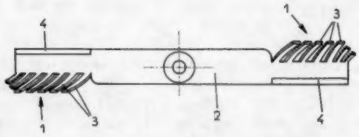
Elmar Wolf, Wissembourg, France, assignor to Sarl O. Wolf, Wissembourg, France

Filed Mar. 27, 1979, Ser. No. 24,373

Claims priority, application France, Apr. 7, 1978, 78 11630; Sep. 14, 1978, 78 27561

Int. Cl.³ A01O *55/18*

U.S. Cl. 56—295 **1 Claim**



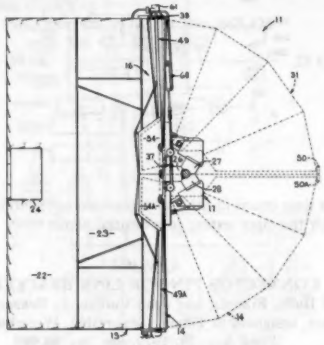
1. In a rotary-scythe grass mower, a cutter blade which is an elongated horizontal metal plate having spaced tines stamped from the metal thereof, the tines being spaced apart from each other and extending in a curved configuration from the horizontal part of the blade upwardly and endwise outwardly of the blade, said tines being disposed on trailing edges of said blade, there being cutting edges on the leading edges of the blade.

4,269,021

FRUIT AND NUT HARVESTING APPARATUS

Philip L. Friday, Hartford Township, Van Buren County, Mich., assignor to Friday Tractor Co., Inc., Hartford, Mich.

Filed Apr. 2, 1979, Ser. No. 26,300
Int. Cl.³ A01G *19/06*
U.S. Cl. 56—329 **19 Claims**



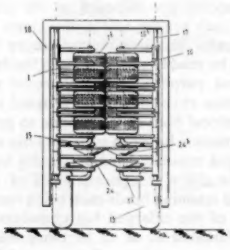
1. Fruit catching apparatus for receiving fruit shaken from a tree, comprising: frame means; an elongated roll rotatably mounted on said frame means, said roll being of progressively increasing size from one end to the other end thereof; a flexible, generally planar sheet which has substantially the shape of a quadrant in plan view, one radial edge of said sheet being affixed to said roll along the lengthwise extent thereof so that said sheet can be rolled up on said roll; a support member affixed to the other radial edge of said sheet; means supporting said support member on said frame means for pivotal movement about an axis substantially perpendicular to the axis of rotation of said roll and located close to said one end of said roll; said sheet having an upwardly projecting wall extending along the perimeter thereof and between the outer ends of the radial edges thereof for retaining fruit on said sheet; and a plurality of upwardly projecting pushers extending inwardly from the perimeter of said sheet at circumferentially spaced-apart locations thereon toward said other radial edge of said sheet for pushing fruit over the top of said roll during winding up of said sheet on said roll.

4,269,022

DEVICE FOR HARVESTING GRAPES OR OTHER BERRIES AND APPARATUS PROVIDED WITH THIS DEVICE

Albert Adams, Domaine de St. Aubin 34170, Lespignan, France

Filed Apr. 17, 1979, Ser. No. 30,884
Claims priority, application France, Apr. 19, 1978, 78 12860
Int. Cl.³ A01D *46/00*
U.S. Cl. 56—330 **19 Claims**



1. A device adapted to automatically harvest fruit during movement through vegetation containing said fruit, said device comprising:

(a) two hollow volumes facing each other and maintained in contact with each other over an area by an adjustable elastic pressure for bursting said fruit being harvested, said hollow volumes including multiple perforations at the area of said contact which are large enough to permit passage of the largest fruit being harvested, said hollow volumes being defined by a material sufficiently flexible to be adjustably displaced within the vegetation through which said volumes are moved such that the portions of the vegetation carrying the fruit to be harvested will be successively introduced and elastically pressed between said perforated surfaces adjacent said contact area; and

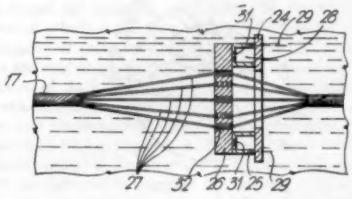
(b) means for creating suction for pulling said harvested fruit through said perforations into said hollow volumes and for conducting said harvest to a storage reservoir, wherein flexible portions of said hollow volumes are adapted to be displaced for bursting said fruit by moving said device through the vegetation being treated.

4,269,023

APPARATUS FOR USE IN FLUIDIZED POWDER FILLING OF MULTIPLE CORE UNIT CABLES

John N. Garner, Pointe Claire, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Continuation-in-part of Ser. No. 930,236, Aug. 2, 1978, Pat. No. 4,205,515. This application Jul. 9, 1979, Ser. No. 56,282
Int. Cl.³ H01B *13/00*
U.S. Cl. 57—1 UN **10 Claims**



1. An opening device for opening a multiple core unit cable core into a plurality of core units comprising:

a support member comprising a tubular housing having a cylindrical central portion and cylindrical end portions on either side of said central portion;

an opening member comprising a rotor rotatably mounted in said housing and having a centre portion with end walls and end portions, one on each side of the centre portion, the centre and end portions of the rotor, respectively, being a close rotatable fit in said central portion and end portions of the housing, the rotor also defining a plurality of holes spaced apart around an axis of the rotor and extending axially there-through, each for passage of a core unit;

the rotor defining axially extending grooves around the periphery of its centre portion, the grooves opening outwardly onto and closed by the housing, at least one nozzle member in the central portion of the housing and directed inwardly onto the grooves, air supply means to said nozzle member to eject pressurized air from said nozzle member and onto said grooves to provide a rotational force on the rotor, and at least one exhaust for pressurized air, said exhaust opening onto said grooves and circumferentially spaced around the central portion of the housing from the nozzle member;

said end portions of said housing including surfaces in opposition to said end walls, and means to supply pressurized air between said end walls and said surfaces; and

means to supply pressurized air between the periphery of the centre portion of the rotor and the central portion of the

housing axially away from the at least one nozzle member to form at least one air bearing therebetween.

4,269,024

STRENGTH MEMBERS FOR THE REINFORCEMENT OF OPTICAL FIBRE CABLES

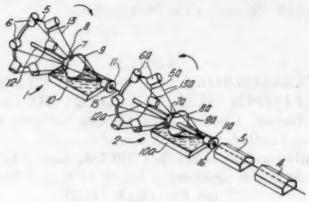
Raymond S. Ashpole, Leighton Buzzard; Colin J. Peachey, Bushey, and Arup K. Kar, Teddington, all of England, assignors to Associated Electrical Industries Limited, London, England

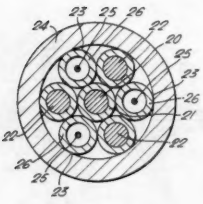
Filed Jul. 19, 1979, Ser. No. 58,797

Claims priority, application United Kingdom, Aug. 1, 1978, 31797/78

Int. Cl.[3] **D02G** *3/36, 3/44;* **D07B** *7/14*

U.S. Cl. 57—232 **9 Claims**





1. A continuous elongate strength member for use in reinforcing an optical fibre cable, which is composed of an assembly of aromatic polyamide filaments impregnated with a synthetic resin, wherein all the said filaments forming the said assembly are individually coated with the resin, wherein the said assembly consists of a first bundle of said resin-coated filaments constituting the core of the assembly, and at least one further bundle of said resin-coated filaments helically stranded in at least one layer around said core, and wherein successive helical layers are stranded in opposite directions.

4,269,025

ELECTRONIC ALARM TIMEPIECE WITH PRESETTABLE ALARM TIME MEMORY

Kenichi Kondo, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

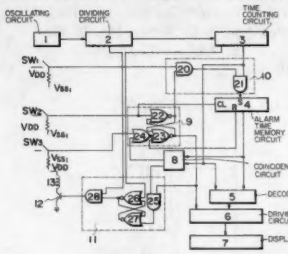
Filed Jul. 3, 1978, Ser. No. 921,466

Claims priority, application Japan, Jul. 20, 1977, 52-87113

Int. Cl.[2] **G04C** *21/00*

U.S. Cl. 368—73 **5 Claims**

1. An electronic alarm timepiece comprising: an oscillating circuit for producing a time standard signal; a time counter for counting the time standard signal; an alarm time memory circuit; a display device for displaying the alarm time and the time count; an actuatable alarm device; a coincidence detector for detecting a coincidence between the time count and the memorized alarm time to produce a signal for actuating the alarm device; and means for effecting memorization of the



present time count in the alarm time memory circuit to preset same for the later setting to a desired alarm time.

4,269,026

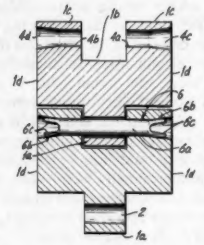
CONNECTOR PIN FOR LINK BRACELETS

Marcel Bulle, Franois, and Jean Vuillaume, Besancon, both of France, assignors to Timex Corporation, Waterbury, Conn.

Filed Aug. 23, 1979, Ser. No. 68,985

Int. Cl.[3] **F16G** *13/18*

U.S. Cl. 59—82 **2 Claims**



1. An improved flexible bracelet of the type having a plurality of links each with at least one projecting tongue at one end and spaced projecting lugs defining at least one groove at the other end, the links being arranged in end-to-end relation with the tongue of one link received in the groove of the adjacent link to provide a plurality of tongue and groove joints along the length of the bracelet, characterized in that:

(a) the tongue of each link includes a cylindrical bore extending transversely therethrough and the spaced lugs of each link each include an enlarged chamber outwardly tapered, truncated-conical in shape extending at least partially transversely therethrough in communication with said tongue bore in coaxial alignment therewith to define a transverse passage with open ends through each joint when the links are arranged end-to-end; and

(b) a connector pin disposed in the transverse passage through each tongue and groove joint to hold adjacent links together in releasable yet secure fashion such that links can be readily removed from the bracelet for length adjustment purposes, said connector pin including an intermediate cylindrical shaft adapted to be disposed in the cylindrical bore of the tongue to provide an axis for relative rotation between adjacent links and also including an enlarged retaining head outwardly tapered, truncated-conical in shape at opposite ends of said intermediate shaft, said retaining heads each being received in a respective one of the enlarged lug chambers with each head being bifurcated so as to be compressible so that said connector pin can be easily removed from the passage through adjacent links simply by exerting axial force on one of said compressible retaining heads to force it into

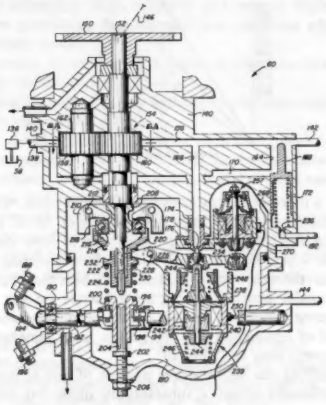
and through said passage and out the opposite end, thereby disengaging the adjacent links from one another.

4,269,027

GAS TURBINE ENGINE IDLE CONTROL AND METHOD

George B. Mattson, Scottsdale, and Geoffrey D. Woodhouse, Phoenix, both of Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Dec. 22, 1977, Ser. No. 863,375
Int. Cl.³ F02C *9/02*
U.S. Cl. 60—39.04 **25 Claims**



24. A method of controlling fuel flow to and during idling of a free turbine type gas turbine engine powering a ground vehicle having a final drive for delivering power to ground engaging wheels, and a clutch with input and output shafts respectively connectable with the engine and the final drive, said method comprising the steps of:

sensing engine speed and clutch output shaft speed; and

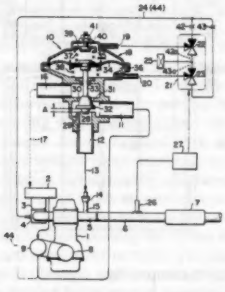
adjusting fuel flow to maintain engine speed at a first idle level and a second higher idle level whenever said clutch output shaft speed is respectively above and below a predetermined value.

4,269,028

SECONDARY AIR SUPPLY SYSTEM FOR THE EXHAUST SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Kyo Hattori, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Apr. 4, 1978, Ser. No. 893,402
Claims priority, application Japan, Dec. 29, 1977, 52-159306
Int. Cl.³ F01N *3/10*; F16K *31/42*
U.S. Cl. 60—276 **5 Claims**



1. A secondary air supply system for the exhaust system of an internal combustion engine, comprising a source of compressed air, an air control valve which supplies a part of the air delivered from said source to the exhaust system of the engine while relieving the rest of the air, an oxygen detector for detecting residual oxygen contained in the exhaust gases flowing through the exhaust system, a source of actuating fluid pressure different from atmospheric pressure, a change-over valve for said actuating fluid pressure, a controller which changes over said change over valve in accordance with the output of said oxygen detector, said air control valve having an inlet port for receiving air from said source of compressed air, an outlet port for supplying a part of the air received to the exhaust system, a relief port for relieving the rest of the air received, a first passage which connects said inlet port and said outlet port, a second passage which connects said inlet port and ssaid relief port, a valve element which reciprocally controls the openings of said first and second passages, first and second diaphragm chambers selectively supplied with either said actuating fluid pressure or atmospheric pressure by way of said change-over valve, at least one diaphragm which defines said individual diaphragm chambers and is connected with said valve element, first and second springs which are separate from said diaphragm and which reciprocally operate to balance said valve element at a neutral position where a predetermined opening ratio of said first passage to said second passage is established, said change-over valve having a first change-over position wherein it connects said first diaphragm chamber to said source of actuating fluid pressure while it connects said second diaphragm chamber to the atmosphere and a second change-over position where it connects said second diaphragm chamber to said source of actuating fluid pressure while it connects said first diaphragm chamber to the atmosphere, and throttle means for throttling only either one of two flows of fluid, one of which is the flow of fluid which flows through said change-over valve between said source of actuating fluid pressure and said diaphragm chambers, and the other of which is the flow of fluid which flows through said change-over valve between the atmosphere and said diaphragm chambers, wherein said diaphragm or diaphragms are adapted so as to shift said valve element against the balancing force of said first and second springs in the direction to increase the opening of said first passage and to decrease the opening of said second passage when the fluid pressure in said first diaphragm chamber is lower than the fluid pressure in said second diaphragm chamber, and so as to shift said valve element against the balancing force of said first and second springs in the direction to increase the opening of said second passage and to decrease the opening of said first passage when the fluid pressure in said second diaphragm chamber is lower than the fluid pressure in said first diaphragm chamber, said spring and said throttle means cooperating each time said change-over valve is actuated, to rapidly return said valve element to said neutral position by said first and second springs and to maintain said element for a while at said neutral position due to the delay of fluid flow caused by said throttle means and thereafter to gradually shift said element in one of said two directions in accordance with the fluid pressure in said first and second diaphragm chambers.

4,269,029

INTERNAL COMBUSTION ENGINE WITH EXHAUST EMISSION CONTROL SYSTEM

Francesco Cavallino, Pinerolo; Pasquale Martinez, Turin; Michele Allione, Turin, and Roberto Schiavuzzi, Turin, all of Italy, assignors to Fiat Auto S.p.A., Turin, Italy

Filed Feb. 22, 1979, Ser. No. 13,994
Claims priority, application Italy, Mar. 23, 1978, 67636 A/78
Int. Cl.³ F02M *23/10*; F01N *3/10*
U.S. Cl. 60—293 **2 Claims**

1. A spark ignition internal combustion engine having an air filter,

first, second, third and fourth cylinders,

an exhaust manifold

first, second, third and fourth exhaust ports leading from said first, second, third and fourth cylinders respectively to said exhaust manifold, and

an exhaust emission control system including means for admitting air into the engine exhaust system, said means being constituted by;

automatic "reed" valve means,

air conduit means interconnecting said air filter of said engine and said automatic "reed" valve means,

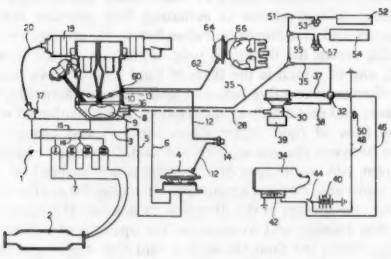
means carrying said automatic "reed" valve means on the cylinder head of said engine, and

means defining internal passageways in said cylinder head, said internal passageways communicating at one end with said automatic "reed" valve means and at the other end with said first and fourth exhaust ports leading from said first and fourth cylinders of said engine, said engine having an engine starter motor and further including means for the admission of supplementary air into the induction manifold, said means comprising:

means defining a supplementary air inlet into said induction manifold of said engine,

a pneumatic "gulp" valve having an air inlet, an air outlet and first and second control pressure inlets,

means connecting said air outlet of said "gulp" valve to said supplementary air inlet into said induction manifold of the engine,



a three port, two position pneumatic solenoid valve having an electrical winding,

means connecting first and second ports of said three port solenoid valve to said first and second control pressure inlets of said pneumatic "gulp" valve,

means defining a hole in said induction manifold,

means connecting said hole in said induction manifold to the third of said three ports of said solenoid valve,

means connecting said electrical winding of said solenoid valve to the winding of said engine starter motor,

an electrical battery,

temperature sensitive switch means mounted on the cylinder head of said engine and connected in series between said solenoid valve and said electrical battery, said temperature sensitive switch means being sensitive to the temperature of the engine coolant and closed when the engine coolant is below a predetermined threshold,

electrical conductor means connected in parallel with said temperature sensitive switch means between said winding of said solenoid valve and said engine starter motor, and

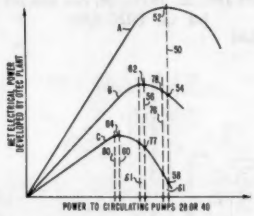
selectively operable switch means closable to connect said electrical conductor means and said engine starter motor to said battery whereby said solenoid valve is energized when said selectively operable switch means is closed to energize said starter motor and when said temperature sensitive switch means is closed.

4,269,030

POWER PLANT OPTIMIZATION CONTROL

Robert L. Osborne, Wallingford, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 6, 1979, Ser. No. 64,458
Int. Cl.³ F03G 7/04
U.S. Cl. 60—641 R **25 Claims**



1. In a thermal energy conversion power plant, which generates electrical energy at a desired power level, including a working fluid; a circulating fluid; and at least one heat exchanger which conducts immiscibly the circulating and working fluids therethrough for transferring heat therebetween, said heat transfer process having an influence on the net power level being generated by said plant, the improvement being a method of optimizing the net power level generated by said plant comprising the steps of:

perturbing the heat transfer process of said at least one heat exchanger about a substantially quiescent heat transfer state;

identifying a direction of perturbation which results in an increase in generated net power level with respect to the generated net power level corresponding to said substantially quiescent heat transfer state; and

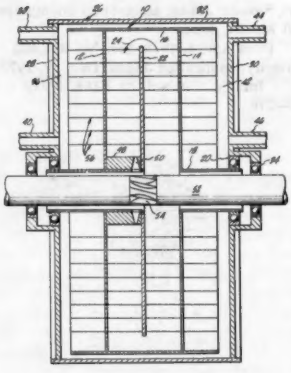
adjusting the heat transfer process in said identified direction from said substantially quiescent heat transfer state until an optimum level in generated net power is substantially reached.

4,269,031

HEAT ENGINE

John E. Loskot, Death Valley Star Route, Baker, Calif. 92309

Filed Mar. 2, 1979, Ser. No. 16,836
Int. Cl.³ F01K 11/04
U.S. Cl. 60—669 **8 Claims**



1. A heat engine comprising

a housing;

an output shaft rotatably mounted centrally through said housing;

a container including container drive shaft means rotatably mounting said container in said housing concentrically about said output shaft, first and second circular panels radially extending from said container drive shaft means, and an annular panel mounted to the peripheries of said first and second circular panels, said container being centrally located in said housing to divide same into a first cavity adjacent a first end of said housing, a second cavity adjacent a second end of said housing and the enclosure of said container;

a partition within and fixed to rotate with said container and radially extending from adjacent said output shaft, said partition permitting flow around said partition adjacent said annular panel;

hot circulation means in said housing to circulate hot fluid through said first cavity;

cold circulation means in said housing to circulate cold fluid through said second cavity;

a closure member extending from said first panel to said partition adjacent said output shaft to prevent flow from said container toward said output shaft between said first panel and said partition;

a nozzle through said closure member to direct conditioned flow from said container toward said output shaft; and

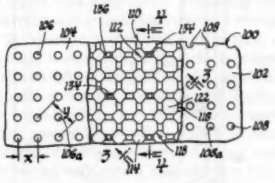
a turbine fixed to said output shaft and aligned with said nozzle to be driven by flow through said nozzle.

4,269,032

WAFFLE PATTERN POROUS MATERIAL

George B. Meginnis, and John A. Spees, both of Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 13, 1979, Ser. No. 48,131
Int. Cl.[3] F02C 7/18
U.S. Cl. 60—754 3 Claims



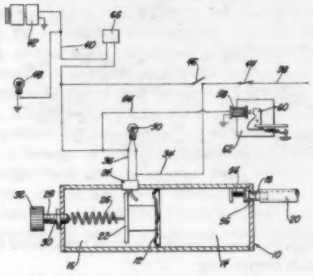
1. A porous laminated wall comprising: an inner sheet and an outer sheet, a first plurality of mechanically formed holes in said inner sheet and a second plurality of mechanically formed holes formed in said outer sheet, said first and second plurality of holes being offset from each other throughout the full extent of said wall segment, and a mechanically press-formed core sheet interposed between said inner and outer sheets having offset depressions formed on either face thereof and raised segments forming flat spaced land surfaces, means for bonding said land surfaces to said inner and outer sheets, respectively, to define a bond joint therebetween, drill holes formed in said core sheet having a width less than that of said offset depressions and having the margins thereof located at spaced relationship to the land surfaces thereby to prevent burr formation thereon from interfering with the interconnection defined by the bond joint between the corrugated core sheet and said inner and outer sheets, said core sheet having a total metal mass equivalent to the original metal mass by displacement of metal to form the depressions and lands therein except for the metal removed by formation of the small drill holes therethrough, said small drill holes communicating the offset depressions on opposite sides of said core sheet to form a tortuous intercommunicating flow path through said core sheet to offset ones of said mechanically formed holes in said inner and outer sheets for flow of coolant through the laminated sheets of said wall segment.

4,269,033

SWITCHING DEVICE

Robert J. Birch, 5273 Folkstone, Troy, Mich. 48098

Filed Jan. 30, 1980, Ser. No. 116,939
Int. Cl.[3] B60H 3/04; F25B 27/00
U.S. Cl. 62—133 3 Claims



1. Means for selectively disengaging an air conditioner compressor and removing the drag and load imposed thereby on a vehicle engine that is operative thereof, and comprising:

a vacuum responsive switching device,

means for electrically connecting said switching device in circuit between the magnetic clutch for an air conditioner compressor and its electrical power source,

means for connecting said switching device to a source of intake manifold vacuum pressure for sensing the changing conditions thereof under varying engine conditions,

and means for selectively and readily adjusting the sensitivity and response of said switching device to different load and power demands made by said engine for varying the extent and duration of the disengagement of said compressor from said engine for comfort and economy control,

having the switching device and its adjustable means provided within the passenger compartment of the vehicle driven by said engine and serviced by said air conditioner, for each of access thereto and for adjustment and selective settings in accord with road conditions as and when encountered,

said switching device including a diaphragm member having one side thereof responsive to engine intake manifold pressure,

said readily adjustable means including spring means connected to said diaphragm member and for counteracting the effects of said manifold pressure,

and threaded means for varying the strength and effects of said spring means,

said spring means including a tension spring connected between said diaphragm and said threaded means on the opposite side of said diaphragm from that which is responsive to said manifold pressure,

a check valve provided in said switching device for closing and shutting off vacuum pressure to said switching device,

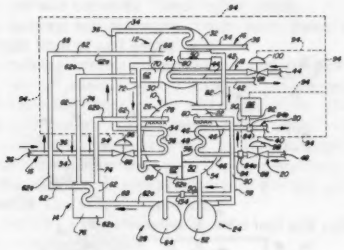
said check valve being biased to a closed position and being responsive to an overriding decrease in vacuum pressure by opening,

and means provided for bleed-by around said check valve when in a closed position.

4,269,034
ABSORPTION UNIT WITH VARIANT CONTROL SYSTEM

Joseph A. Rzechula, 459 E. Park Ave., Elmhurst, Ill. 60126

Filed Sep. 10, 1979, Ser. No. 73,851
Int. Cl.[3] F25B 15/00
U.S. Cl. 62—141 46 Claims



1. An absorption refrigeration system responsive to variant load demands comprising:

an evaporator for receiving and retaining refrigerant;

chilled fluid supply means for providing chilled fluid to said evaporator and for directing said chilled fluid from said evaporator;

vaporizing means providing said refrigerant in the proximity of said chilled fluid supply means for vaporization of a portion of said refrigerant within said evaporator;

an absorber communicating with said evaporator for receiving and retaining solution for absorbing refrigerant vaporized within said evaporator, thereby diluting said solution;

a generator coupled with said absorber for receiving and retaining said dilute solution from said absorber;

heating means for providing a heat source for vaporizing said refrigerant contained within said dilute solution while said dilute solution is retained within said generator, thereby separating said refrigerant from said solution and making said solution more concentrated;

a condenser communicating with said generator for condensing said refrigerant vaporized in said generator and for retaining refrigerant condensate separate from said solution;

condenser fluid supply means for directing condenser fluid to said absorber and for directing said condenser fluid from said absorber to said condenser; said condenser fluid for absorbing heat radiated from said refrigerant during condensation;

control means for adjusting the operation of said absorption refrigeration system to respond to variations in load demand upon said absorption refrigeration system, said control means comprising:

a plurality of temperature sensitive means for monitoring temperature comprising:

first temperature responsive means engaging said chilled fluid supply means for providing a first signal having magnitude dependent upon the temperature of said chilled fluid entering said evaporator; and,

second temperature responsive means engaging said chilled fluid supply means for providing a second signal having magnitude dependent upon the temperature of said chilled fluid exiting said evaporator;

comparison means connected to said first and second temperature responsive means for receiving said first and second signals, for comparing said first signal with said second signal, and for comparing said first and second signals with predetermined values, said comparison means providing a resultant signal having a magnitude dependent upon the instantaneous relationship of said first and second signals and said predetermined values; and,

a plurality of valves coupled with said comparison means and responsive to said resultant signal comprising:

a chilled fluid valve engaging said chilled fluid supply means for regulating the flow of chilled fluid entering said evaporator, said chilled fluid valve permits chilled fluid flow in an amount dependent upon the magnitude of said resultant signal;

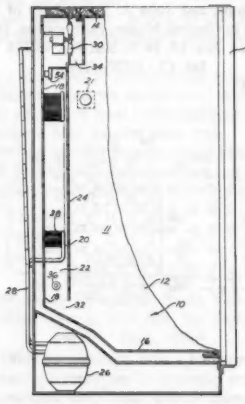
a condenser fluid valve engaging said condenser fluid supply means for regulating the flow of condenser fluid entering said absorber, said condenser fluid valve permits condenser fluid flow in an amount dependent upon the magnitude of said resultant signal; and,

a heat source valve engaging said heating means for regulating the amount of heat entering said generator, said heat source valve permits passage of heat in an amount dependent upon the magnitude of said resultant signal.

4,269,035
DEFROST CONTROL

Robert B. Gelbard, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Nov. 19, 1979, Ser. No. 95,713
Int. Cl.[3] F25D 21/06
U.S. Cl. 62—155 4 Claims



4. A defrost control for a refrigeration system having means for terminating defrost comprising:

a liner, including spaced side walls and a back wall, defining a freezer chamber;

a vertically extending evaporator adjacent said back wall;

means including a wall member spaced from said back wall defining a heat exchanger enclosure, said evaporator enclosure having an inlet opening and an outlet opening spaced from said inlet;

air moving means arranged in said outlet opening for causing circulation of air from said chamber through said enclosure inlet and outlets, and back to said chamber;

said evaporator comprising a serpentine tubular member arranged intermediate said openings in said enclosure having spaced turns defining passes extending in the direction of air flow between said openings, said spaced turns being spaced apart so that the connecting tubes therebetween converge toward one another in the direction of said air flow, said evaporator being provided with integral fins having their distal ends in abutment with said back wall to thermally link said back wall with the evaporator frost load;

a defrost heater means arranged in said enclosure being positioned between the lower portion of said evaporator and said inlet opening;

air sensing control means being arranged in said heat exchanger space upstream of said evaporator, said control means including a sensing surface being arranged to be within the boundary layer thickness of air passing through said enclosure in natural convection;

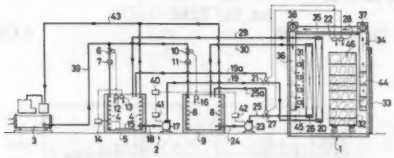
switching means responsive to the temperature of said air flow in said boundary layer thickness for terminating said defrost cycle when said air flow passing over evaporator is at a predetermined temperature.

4,269,036

FOOD DEFROSTING APPARATUS

Fumiharu Koide, Yokohama, and Masami Ohshima, Musashino, both of Japan, assignors to Gomi Patent Office and Shinsei Reizo Kogyo Kabushiki Kaisha, both of Tokyo, Japan, a part interest

Filed Aug. 15, 1979, Ser. No. 66,654
Claims priority, application Japan, Aug. 23, 1978, 53-103199
Int. Cl.[3] F25B *29/00, 27/02;* **F25D** *11/02*
U.S. Cl. 62—159 **4 Claims**



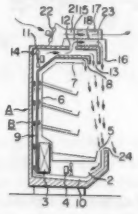
1. In a food defrosting and storing apparatus for a cabin, a refrigeration system including a thawing water tank evaporator and a storage water tank evaporator, a thawing water tank containing the thawing water tank evaporator, a storage water tank containing the storage water tank evaporator, a heater means in the thawing water tank, a first electromagnetically operable switch electrically connected to the heater means, an electric supply source, a first thermostat in the thawing water tank electrically connected to the first electromagnetically operable switch for controlling the first switch in dependency upon the temperature of the water in the thawing water tank, a first line for delivering refrigerant medium into the thawing water tank evaporator, a first branch line connecting the first line and the storage water tank evaporator for delivering refrigerant medium into the storage water tank evaporator, a second line for discharging refrigerant medium from the thawing water tank evaporator, a second branch line connecting the second line and the storage water tank evaporator for discharging refrigerant medium from the storage water tank evaporator, a first expansion valve on the first line, a first electromagnetically operable valve on the first line, a second thermostat in the thawing water tank electrically connected with the first electromagnetically operable valve for controlling the first valve in dependency upon the temperature of the water in the thawing water tank, a second expansion valve on the first branch line, a second electromagnetically operable valve on the first branch line, a third thermostat in the storage water tank and electrically connected to the second electromagnetically operable valve for controlling the second valve in dependency upon the temperature of the water in the storage water tank; a thawing water circulation system including a thawing heat exchanger in the cabin, a thawing water delivery circuit connecting the thawing water tank and the thawing heat exchanger, a thawing water discharging circuit connecting the thawing heat exchanger and the thawing water tank, an electrically driven first pump on the thawing water delivery circuit for conducting thawing water from the thawing water tank to the thawing heat exchanger, a first bypass circuit connecting an upstream portion on the thawing water delivery circuit of the thawing heat exchanger to the thawing tank, a third electromagnetically operable valve at the upstream portion on the thawing water delivery circuit for providing a passage of thawing water bypassing the thawing heat exchanger back into the thawing water tank through the first bypass circuit, and a fourth thermostat in the cabin electrically connected to the third electromagnetically operable valve for controlling the third valve in dependency upon the temperature in the cabin; a storage water circulation system including a storage heat exchanger in the cabin, a storage water delivery circuit connecting the storage water discharging circuit connecting the storage heat exchanger and the storage water tank, an electrically driven second pump on the storage water delivery circuit for conducting storage water from the storage water tank to the storage heat exchanger, a second bypass circuit connecting an upstream portion on the storage water delivery circuit of the storage heat exchanger to the storage water tank, a fourth electromagnetically operable valve at the upstream portion on the storage water delivery circuit for providing a passage of storage water bypassing the storage heat exchanger back into the storage water tank through the second bypass circuit, and a fifth thermostat in the cabin electrically connected to the fourth electromagnetically operable valve in dependency upon the temperature in the cabin.

4,269,037

REFRIGERATED SHOW CASE

Masashi Karashima, 88-5, Nakano, Ebina-shi, Kanagawa-ken, Japan

Filed Aug. 7, 1979, Ser. No. 64,628
Claims priority, application Japan, Jul. 3, 1979, 54-83441
Int. Cl.[3] A47F *3/04*
U.S. Cl. 62—256 **1 Claim**



1. In a refrigerated show case in which a cold air flow is circulated along a show case bottom wall, rear wall and top wall and across a show case front opening between an ejection port and a suction port disposed along the upper and lower edges, respectively, of said front opening between an ejection port and a suction port disposed along the upper and lower edges, respectively, of said front opening to refrigerate the interior of said show case, the improvement wherein said show case further comprises a by-pass port in said top wall for by-passing a part of said cold air flow, a heat-exchanger disposed of said top wall and communicated with said by-pass port, and an ejection port of a moderated air flow communicated with said heat-exchanger and disposed outside of and in parallel to

said ejection port of said cold air flow, said moderated air flow being formed from said by-passed cold air flow by heat-exchange with hot ambient air above said refrigerated show case through said heat-exchanger.

4,269,038

Patent Not Issued For This Number

4,269,039

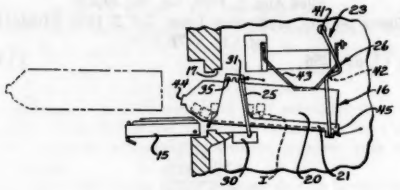
ICE RECEPTACLE SUPPORT

Cecil J. Baker, Ohio Township. Warrick County, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sep. 13, 1979, Ser. No. 75,524

Int. Cl.³ F25C *5/18*

U.S. Cl. 62—344 **31 Claims**



1. In a refrigeration apparatus having an upwardly opening ice storage receptacle disposed within a refrigerated space, the improvement comprising:

swing support means for supporting the receptacle and applying a horizontally forwardly directed gravity-biased force and a weaker horizontally rearwardly gravity-biased force thereto for causing resultant gravity-biased urging of the receptacle from a storage position within said space to an access position providing access to the ice in the receptacle from exteriorly of said space; and

means for providing an adjustable amount of resultant gravity biasing of the receptacle comprising means for adjusting at least one of said gravity-biased forces.

28. In a refrigeration apparatus having wall means defining a refrigerated space and ice storage means movable between a storage position within said space and an access position, the improvement comprising:

first support means connected to said ice storage means and providing a first, forward biasing force urging said ice storage means toward said access position; and

second support means connected to said ice storage means and arranged to provide a second, rearward biasing force urging said storage means toward said storage position, said first biasing force being greater than said second biasing force when said receptacle is in said storage position.

4,269,040

HEAT PUMP DRIVE

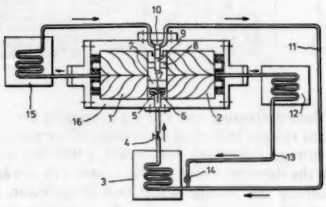
Edgard Grundmann, and Winfried Bernhardt, both of Wolfsburg, Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Feb. 12, 1979, Ser. No. 11,668

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1978, 2806729

Int. Cl.³ F25B *43/02*

U.S. Cl. 62—467 PR **6 Claims**



1. In a heat pump arrangement including an evaporator, a first condenser and a compressor connected in a circuit containing a heat-carrying medium and each having an inlet and an outlet; the compressor being arranged downstream of the evaporator and the first condenser being arranged downstream of the compressor as viewed in the direction of the flow of the medium, whereby the compressor receives medium in the vapor phase from the outlet of the evaporator and delivers medium in the liquid phase to the inlet of the evaporator through the first condenser; the improvement comprising an expander having an inlet coupled to the outlet of said evaporator; medium splitting means situated between the outlet of said evaporator and the inlet of said expander and said compressor for dividing the vaporized medium exiting from said evaporator into a first partial stream and a second partial stream; said first partial stream being introduced into said expander for driving said expander; a second condenser having an inlet coupled to the outlet of said expander for receiving medium therefrom; a pump having an inlet coupled with the outlet of said second condenser and an outlet coupled with the inlet of said evaporator; force-transmitting means connecting said expander with said compressor and said pump for driving said compressor and said pump from said expander energized by said first partial stream; said second partial stream being introduced into said compressor; and further wherein said first condenser is arranged for extracting useful heat from said second partial stream and the temperature of the medium exiting from said first condenser is higher than and the temperature of the medium exiting from said second condensor is lower than the temperature of the medium exiting from said evaporator.

4,269,041

ABSORPTION REFRIGERATING MACHINE WITH STORAGE DEVICE FOR OPERATION WITH YIELD OF HEAT ENERGY AND REFRIGERATING REQUIREMENT DIFFERENT IN TIME

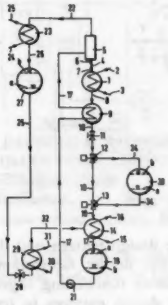
Günther Holldorff, Berlin, Fed. Rep. of Germany, assignor to Borsig GmbH, Berlin, Fed. Rep. of Germany

Filed Jan. 4, 1980, Ser. No. 109,636

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1979, 2900388

Int. Cl.³ F25B *15/00*

U.S. Cl. 62—476 **7 Claims**



1. An absorption refrigerating machine, utilizing a refrigeration medium, for operation with refrigeration requirement and heat energy yield at any time relationshp therebetween, and machine comprising:

a condenser for liquefying refrigeration medium vapor;

first storage means, in communication with and located after said condenser in the direction of flow of refrigeration medium, for storing refrigeration medium-fluid;

a solution heat exchanger;

a continuous conduit in communication with and located after said heat exchanger in the direction of flow of refrigeration medium solution;

a bypass conduit operatively communicable with said continuous conduit by means of a first and second distributor valve, said first distributor valve being closer to said heat exchanger in the direction of flow of refrigeration medium solution;

second storage means arranged in and in communication with said bypass conduit for storing weak refrigeration medium-solution;

an absorber operatively communicable with said continuous conduit and said first storage means; and

third storage means in communication with, and located in the direction of flow after, said absorber for storing rich refrigeration medium-solution.

4,269,042

CENTRIFUGE REFRIGERATION SYSTEM

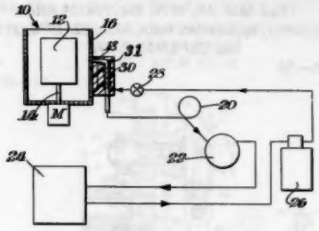
John F. Williams, New Canaan, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 28, 1979, Ser. No. 80,083

Int. Cl.³ F25B *41/00*

U.S. Cl. 62—513 **3 Claims**

1. In a centrifuge system having a fluid interconnected compressor, condenser, expansion valve, evaporator, located contiguous the rotor cavity of said centrifuge for cooling said cavity, and finally a suction line connected between the outlet of said evaporator and said compressor, said system operating to transfer a referigerant for expansion in said evaporator to effect cooling of said centrifuge rotor, the improvement wherein a capillary sized line is connected between said expansion valve and said evaporator to permit locating said expansion valve at a point removed from said centrifuge rotor.



4,269,043

COUPLING FOR RESILIENTLY CONNECTING TWO SHAFTS FOR TRANSMISSION OF TORQUE

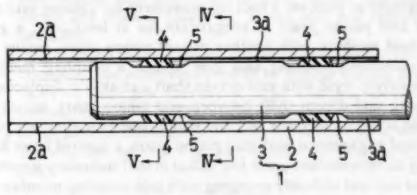
Kiyohei Kizu; Taketo Matoba; Yasuo Oguni, and Hideaki Sakurai, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 10, 1979, Ser. No. 56,415

Claims priority, application Japan, Feb. 24, 1979, 54-23398[U]

Int. Cl.³ F16D *3/68*

U.S. Cl. 64—11 R **7 Claims**



1. A coupling interposed between a driving shaft and a driven shaft for transmitting torque from said driving shaft to said driven shaft, said coupling comprising:

a tubular member having an inner peripheral surface, a pair of longitudinally symmetrical, outwardly curved, accuate portions and a pair of longitudinally parallel plane portions;

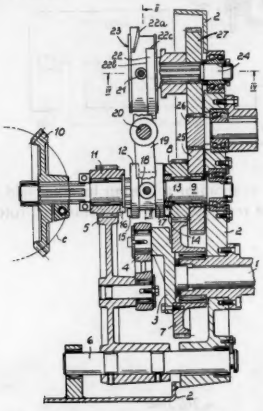
a solid member including a pair of longitudinally parallel plane portions and being received in said tubular member and having an outer peripheral surface spaced apart from said inner peripheral surface of said tubular member; and

a plurality of impact absorbing members made of elastic material and fixed to said outer peripheral surface of said solid member, said impact absorbing members being so dimensioned and positioned as to prevent contact of said inner peripheral surface of said tubular member and said outer peripheral surface of said solid member when relative torque working therebetween is under a certain level and permit contact of said inner peripheral surface of said tubular member and said outer peripheral surface of said solid member when said torque is at or over said level.

4,269,044
CIRCULAR KNITTING MACHINE

Francesco Lonati, Brescia, Italy, assignor to Costruzioni Meccaniche Lonati S.p.A., Brescia, Italy

Filed Mar. 19, 1979, Ser. No. 21,536
Claims priority, application Italy, Mar. 22, 1978, 21504 A/78
Int. Cl.[3] D04B *15/16*
U.S. Cl. 66—56 7 Claims



1. A circular knitting machine for stockings and like articles, having at least one needle cylinder and means for switching from continuous rotary motion of said at least one needle cylinder to reciprocating motion thereof, and vice versa, comprising a stationary structure, a driven shaft rotatably supported by said stationary structure for rotating said at least one needle cylinder, two pinion gears idly arranged on said driven shaft axially spaced from one another, a gear segment meshing with one of said pinion gears, means for causing said gear segment to perform a rocking movement for causing said one of said pinion gears to reciprocate for at least 360°, a gear wheel meshing with another of said pinion gears, means for continuously rotating said gear wheel, a coupling member rotatively rigid with said driven shaft and axially displaceable along said driven shaft between said pinion gears, means on said coupling member and said pinion gears for alternate rotational engagement with said pinion gears, a control lever having an intermediate point journalled in said stationary structure and one end slideably engaging with said coupling member for axial displacement thereof, rotatable cams slideably engaging another end of said control lever to cause angular displacement thereof and corresponding axial displacement of said coupling member for alternate rotational engagement between said coupling member and said pinion gears, driving means for rotating and rotatable cams with an angular speed corresponding to that of said driven shaft, and means for coupling said rotatable cams with, and uncoupling said rotatable cams from, said driving means.

4,269,045
HOME KNITTING MACHINE FOR PRODUCING PROGRAMMED DESIGNS

Takashi Hida, Toyota; Tsutomu Mitsui, Chityu; Kazutaka Kuwana, and Tadaaki Hashiride, both of Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 30, 1978, Ser. No. 891,777
Claims priority, application Japan, Mar. 31, 1977, 52-37372
Int. Cl.[3] D04B *7/00, 15/66*
U.S. Cl. 66—75.2 7 Claims

1. A home knitting machine for producing programmed designs comprising:

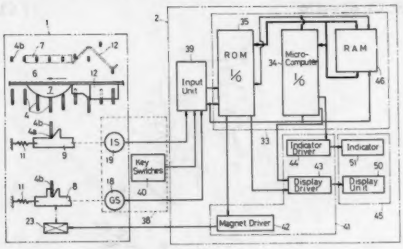
a needle bed supporting a plurality of needles in side by side relation;

a carriage mounted on the bed for movement traversing the needles;

detection means for generating carriage position signals in response to traversing movement of the carriage;

needle selection means for selecting needles to knit a design pattern in response to design pattern data;

an electronic control system including a semiconductor read only memory device having two separate sections, one for



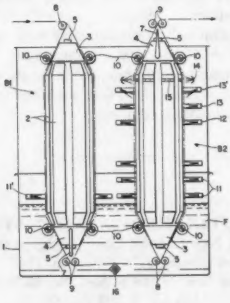
storing basic design pattern unit data and the other for storing specific design fabrication programs said two separate sections functioning together to yield specific combination design patterns in response to a series of design fabrication instructions, said electronic control system further comprising a central control unit for supplying out design pattern data in accordance with appointed programs in response to the carriage position signal; and

key switches for appointing codes corresponding to the specific programs to the electronic control system.

4,269,046
EXTERNALLY HELD CYLINDRICAL SPREADING MEANS FOR TUBULAR FABRIC

Christian Strahm, Küsnacht, Switzerland, and Fritz Gageur, Lindau-Bodolz, Fed. Rep. of Germany, assignors to Lindauer Dornier Gesellschaft mbH, Fed. Rep. of Germany

Filed Nov. 7, 1979, Ser. No. 92,100
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1978, 2848409
Int. Cl.[3] D06F *29/00;* D06C *5/00*
U.S. Cl. 68—13 R 15 Claims



1. In an externally held cylindrical spreading means for tubular fabric material, particularly for the treatment of the material with a fluid treating agent, with a central carrier for radially displaceable supports and segment-like guide elements carried by the supports,

the improvement comprising body means at each end of the

central carrier, each of said body means being tapered in the longitudinal direction,

said guide elements extending in the longitudinal direction of said spreading means between said body means,

and supporting and transporting roller means mounted against the exterior of said body means, said roller means having a profile adapted to the form of said tapered body means.

4,269,047

APPARATUS FOR PASSING A WORKING MEDIUM THROUGH A CONTINUOUSLY MOVING PERMEABLE FABRIC WEB

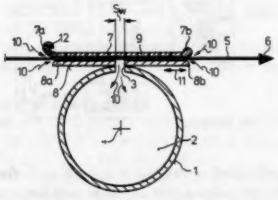
Manfred Schuierer, Michelstadt, Fed. Rep. of Germany, assignor to Bruckner Apparatebau, Erbach, Fed. Rep. of Germany

Filed May 17, 1979, Ser. No. 40,063

Claims priority, application Fed. Rep. of Germany, May 22, 1978, 2822214

Int. Cl.[3] **D06B** *5/08*

U.S. Cl. 68—181 R **9 Claims**



1. Apparatus for passing a working fluid through a continuously moving permeable fabric web, comprising a tube having a longitudinal slot which extends over the entire working width of the apparatus, and extends transverse to and immediately below the fabric web, wherein the improvement comprises

(a) a flexible strip which has one edge fixed against movement, immediately above the moving fabric web, said fixed edge being substantially ahead of the slot in the direction of travel of the fabric web, the remainder of the strip extending past the slot and resting loosely on the fabric web and on any exposed end portions of the slot,

(b) a pair of guide surfaces on which the fabric rests, one extending forward and the other extending rearward from the slot,

(c) the guide surfaces together being substantially coextensive with the flexible strip, and forming with the flexible strip a stationary flow channel for the fluid, which flow channel extends forward from the slot for a distance which is from about 7 to 20 times the width of the slot, and also extends rearward from the slot for a distance which is from about 7 to 20 times the width of the slot, whereby the fluid passing through the slot is caused to flow longitudinally through the fabric in such flow channel in two flow paths, one flow path extending forward from the slot for such distance along the flow channel, and the other flow path extending rearward from the slot for such distance along the flow channel.

4,269,048

DOOR LOCKING SYSTEM

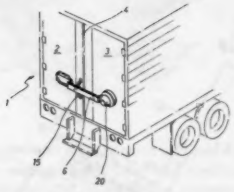
Robert L. McDorman, P.O. Box 473, La Porte, Tex. 77571

Continuation-in-part of Ser. No. 825,823, Aug. 8, 1977, Pat. No. 4,132,093. This application Dec. 19, 1978, Ser. No. 971,024

The portion of the term of this patent subsequent to Jan. 2, 1996, has been disclaimed.

Int. Cl.[3] **E05B** *65/48*

U.S. Cl. 70—13 **8 Claims**



1. A lock assembly comprising:

a lock pin having a reduced portion intermediate its ends;

a pin cover for locking engagement over said pin comprising:

a housing having a solid base;

a sleeve secured to the inside surface of said base and extending therefrom for substantially the height of said housing, said sleeve having inside dimensions larger than the outside dimensions of said pin to provide a sliding fit between the sleeve and the pin, said sleeve having a pair of opposed slots intermediate its length;

a pair of jaw elements adapted to fit within said slots and providing opposed locking surfaces on their lower faces when fully inserted into said slots, said jaw elements having upper cam surfaces for engaging the pin as it is inserted into said sleeve for camming the jaw elements outwardly during insertion;

means for biasing said jaw elements into said slots comprising pivotally mounted jaw carriers substantially surrounding said sleeve and secured to said jaw elements and resilient means for urging said jaw carriers inwardly;

a lock recessed in the sidewall of said housing and having rotatable cam elements operable to engage mating surfaces on said jaw carriers to urge said jaw carriers outwardly against the bias of said resilient means; and

a cover plate detachably secured to the larger end of said housing and having a central opening for passing the pin.

4,269,049

WHEEL LOCK

George H. Henderson, 1098 Meadow Dr., Lennon, Mich. 48449

Filed Jul. 20, 1978, Ser. No. 926,494

Int. Cl.[3] **E05B** *71/00, 73/00*

U.S. Cl. 70—227 **3 Claims**

1. A wheel locking mechanism comprising:

(a) a pair of opposed jaws, adapted to matingly abut, the jaws being configured to encircle the wheel of a vehicle when in mating abutment;

(b) at least one pivot, the pivot mounting one jaw thereon such that at least one jaw is pivotally rotatable toward the other jaw;

(c) a housing, the jaws being mounted for pivotal rotation within the housing;

(d) first means for locking the pivotally rotatable jaw against rotation when the jaws are in mating abutment; said first locking means comprising:

1. a pair of spaced apart brackets disposed in the housing;

2. a locking pin supported by the brackets and projecting therethrough, and

3. means for biasing the locking pin toward the pivotal jaw;

(e) a release for releasing the first locking means from its locking position; and

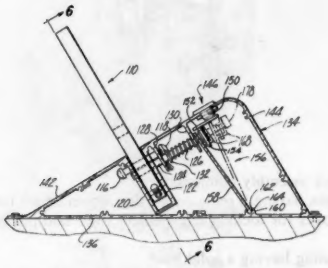
(f) a second locking means for locking the release in a first position, the first position maintaining the first locking means in locking position to prevent the jaw from rotating;

wherein the jaw has an aperture which receives the locking pin upon mating abutment of the jaws, the locking pin preventing rotation of the pivotal jaw when in the aperture, the second locking means preventing the first locking means from being removed from the aperture when in the first position;

said release comprising:

a wall rotatably mounted in the housing and connected to the second locking means and being responsive thereto, the wall engaging the locking pin, and

wherein rotation of the second locking means to the first position causes the wall to approach one of the support brackets and rotation of the second locking means to a second position causes the wall to engage the locking pin to force it out of the aperture against the normal bias.



4,269,050

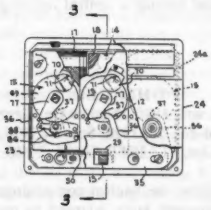
TIME LOCK WITH KICKER ARM CARRIER ACTUATOR

Charles G. Bechtiger, La Chaux-de-Fonds, Switzerland, and James C. Miller, Nicholasville, Ky., assignors to Sargent & Greenleaf, Inc., Nicholasville, Ky.

Filed Sep. 7, 1978, Ser. No. 940,834

Int. Cl.³ E05B 43/00

U.S. Cl. 70—272 **24 Claims**



1. A time lock for bank vault doors and the like, comprising a housing, a plurality of timer units of the settable dial type mounted in said housing, a carrier assembly movably mounted in the housing for movement between a first locking position and a second release position, snubber bar blocking means in said housing movable between a snubber bar blocking position and a release position and control means therefor releasibly held by the carrier assembly for holding the blocking means in blocking position while said carrier assembly occupies said locking position, each of said timer units having a rotatable time indicating dial and a clockwork mechanism intercoupled therewith including manual setting means for rotating the dial to the desired time lapse indication, snap action carrier trip means including a spring driven kicker arm supported for movement forwardly adjacent the face of the dial through a trip stroke between a cocked position and a disarmed position, latch means for releasably latching said kicker arm in the cocked position when said dial occupies time indicating positions above zero time, and release means driven by the clockwork mechanism for activating the latch means to release the kicker arm in spring forced condition from said cocked position when the dial reaches zero time to cause the kicker arm to be abruptly kicked by the spring force thereon against said carrier assembly for abruptly shifting the carrier assembly to release position.

4,269,051

ROLLING MILLS AND OPERATION THEREOF

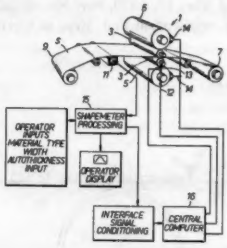
Robin Clarke, Sheffield; Douglas J. Thomas, Poole; George T. F. Kilmister, Christchurch, and Robert R. Beal, North Anston, Nr. Sheffield, all of England, assignors to Loewy Robertson Engineering Co. Ltd., Poole, England

Filed Apr. 2, 1979, Ser. No. 26,186

Claims priority, application United Kingdom, Mar. 31, 1978, 12668/78

Int. Cl.³ B21B 37/00

U.S. Cl. 72—9 **11 Claims**



1. A method of operating a rolling mill, for rolling metal strip, which includes a pair of roll assemblies, means for adjusting the gap between said roll assemblies at each of their ends, means for bending said roll assemblies, means for adjusting the temperature of said roll assemblies along their length, and means located downstream of said roll assemblies for detecting the tension of a strip being rolled at a plurality of zones defined across the width thereof, comprising the steps of:

utilizing signals from said detecting means to substantially continuously determine the best straight line which fits the shape of said strip being rolled as represented by said signals;

utilizing at least one parameter of said straight line to initiate differential adjustment of said roll gap in such a sense as to change said parameter substantially to a predetermined value;

utilizing said signals from said detecting means to substantially continuously determine the best symmetrical parabola which fits the shape of said strip being rolled as represented by said signals;

utilizing at least one parameter of said parabola to initiate the operation of said roll bending means in such a sense as to change said parameter substantially to a predetermined value;

estimating the resulting effect of said differential adjustment and said roll bending action upon said signals from said detecting means; and

subtracting said estimated effects from said signals from said detecting means so as to produce residual signals which are used to operate said temperature adjusting means in order to adjust the temperature of said roll assemblies at localized regions along their length so as to even out

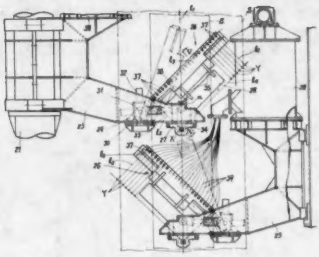
residual variations of said tension of said strip across its width.

4,269,052

MECHANICAL Ddescaling DEVICE

Isao Imai; Hiromasa Hirata, both of Yokohama; Takao Kawanami, and Yasuhiro Omura, both of Tokai, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha and Nippon Steel Corporation, both of Tokyo, Japan

Filed May 11, 1979, Ser. No. 38,262
Claims priority, application Japan, Jun. 9, 1978, 53-69627
Int. Cl.[3] B21B *45/06*; B08B *3/02*
U.S. Cl. 72—39 8 Claims



1. A device for mechanically descaling at least one surface of a generally planar linearly-displaced metal sheet (S), comprising

(a) a stationary frame (**21**, **22**, **23**, **25**) arranged adjacent the path of travel of the metal sheet; and

(b) at least one nozzle assembly (**26**) connected with said frame adjacent the sheet surface, each of said nozzle assemblies including

(1) a nozzle support member (**28**);

(2) shaft means (**34**) connecting said support member with said frame for pivotal movement about a first axis (X) normal to the centerline (l_1) of the sheet;

(3) a plurality of parallel nozzle members (**37**) connected in equally spaced relation with said support member,

(a) the tips of said nozzle members being contained in a common line (l_3);

(b) said nozzle members having parallel axes (l_2) contained in a common plane that

(1) contains said common line, and

(2) is arranged at a first angle (β) relative to the sheet surface; and

(4) first drive means (**32**, **33**) for pivoting said support member about said first axis to vary a second angle (α) between said common line and the sheet centerline, whereby when a slurry is applied to said nozzle members to direct a plurality of descaling slurry jets against the sheet surface, the support member may be pivoted about said first axis to control the extent of the impingement area of the descaling slurry jets on the sheet surface.

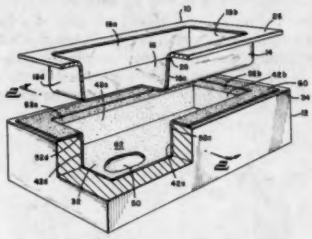
4,269,053

METHOD OF SUPERPLASTIC FORMING USING RELEASE COATINGS WITH DIFFERENT COEFFICIENTS OF FRICTION

Suphal P. Agrawal, Torrance, and Edward D. Weisert, Rolling Hills Estates, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 25, 1979, Ser. No. 60,263
Int. Cl.[3] B21D *37/18*
U.S. Cl. 72—42 15 Claims

1. In the method of making a structure by superplastic forming, wherein portions of a preform, are expanded in a superplastic condition against a forming member, the improvement comprising the step, prior to expanding said preform, of applying a material between said preform and said forming member that provides a lower coefficient of friction between said portions of said preform to be expanded and said forming member than exists between said portions of said preform where expansion is to be minimal and said forming member.

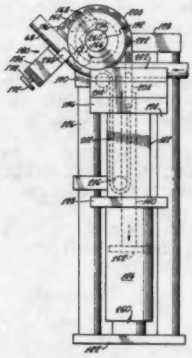


4,269,054

BENDING METHOD

Homer L. Eaton, Leucadia, Calif., assignor to Eaton-Leonard Corporation, Carlsbad, Calif.

Division of Ser. No. 887,725, Mar. 17, 1978, Pat. No. 4,201,073.
This application Nov. 13, 1979, Ser. No. 93,850
Int. Cl.[3] B21D *7/04*
U.S. Cl. 72—151 11 Claims



1. A method of bending comprising

clamping a forward portion of a member to be bent against a rotary bend die,

exerting a bending force on said bend die to effect rotation thereof, so as to pull the member around the bend die and

applying frictional restraint to said member by clamping a rearward portion thereof with a force that is a function of said bending force that pulls the member.

4,269,055

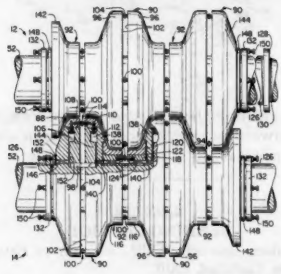
LARGE PROFILE SHEET METAL CORRUGATOR

Eugene W. Sivachenko, 6471 Riverside Dr., Redding, Calif. 96001; Artemas M. Larkin, Redding, and Bogdan W. Bernert, Fair Oaks, both of Calif., assignors to Eugene W. Sivachenko, Redding, Calif.

Filed Apr. 10, 1979, Ser. No. 28,767
Int. Cl.[3] B21D *13/04*
U.S. Cl. 72—180 33 Claims

1. In an apparatus for roll forming a flat sheet into a corrugated sheet having an undulating profile defined by alternating corrugation peaks and corrugation troughs each forming a

generally concave surface and a parallel, generally convex surface, the peaks and trough being interconnected by slanting corrugation sides, the apparatus including at least an upper forming roll disposed on one side of the sheet and a cooperating lower forming roll disposed on another side of the sheet, the improvement to the rolls of said one pair of rolls comprising for each roll: a first, generally disc shaped die having, in profile a generally convexly shaped periphery and a relatively large maximum diameter, means for rotatably mounting the first die; a second, generally disc shaped die having, in profile, a generally concave periphery and a relatively smaller maximum diameter; means for rotatably mounting the second die in an axially spaced relation from the first die so that the peripheries of the dies, in profile, corresponds to the desired shape of the convex and concave surfaces of the corrugated sheet and so that the dies rotate about parallel axes; a third disc shaped die mounted to the shaft and disposed between the first and second dies, the third die having a surface for contacting a corresponding corrugation side which is shaped complementary to the shape of the side; means for power-rotating at least one of the disc shaped dies; and means permitting the first, second and third dies to rotate at differing rates of rotation.

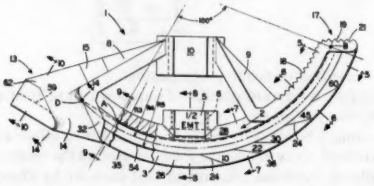


4,269,056

CONDUIT BENDER CONSTRUCTION

Richard R. Kozinski, 2205 Dunkeith Dr., NW., Canton, Ohio 44708

Filed May 29, 1979, Ser. No. 43,094
Int. Cl.³ B21D *7/02*
U.S. Cl. 72—459 **8 Claims**



1. A bender construction including:

(a) a body having a curved base portion, a fixed hooked end formation formed integrally with said base portion at one end thereof and socket means, said socket means being adapted to receive an end of an operating handle;

(b) said base portion having a pair of laterally spaced, longitudinally extending, arcuate-shaped side walls forming a longitudinally extending conduit-receiving opening therebetween;

(c) an end wall integrally connected to and extending between the side walls opposite of said conduit-receiving opening; and

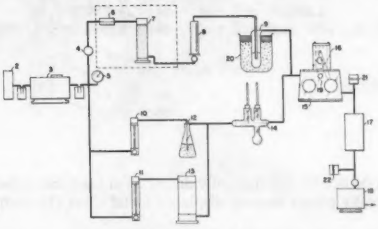
(d) the side walls having two pairs of spaced, concavely curved inner surfaces forming inner and outer overlapping longitudinally extending conduit-receiving grooves therebetween, said grooves each having an arcuate bending length of approximately 100° with said grooves being in concurrent relationship with respect to each other for approximately 70° of their individual 100° bending arcs, and with the bending arc of the outer groove starting approximately 15° before the bending arc of the inner groove with respect to the hooked end formation of the curved base portion.

4,269,057

MULTIPURPOSE HUMIDITY CONTROLLED AGENT GENERATOR

Kwok Y. Ong, Aberdeen; Michael T. Packard, Bel Air, and Charles J. McDowell, Edgewood, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 24, 1979, Ser. No. 87,892
Int. Cl.³ G01N *31/00*
U.S. Cl. 73—1 G **23 Claims**



1. A system for generating a stable concentration of agent vapors and aerosols under variable controlled conditions of relative humidity and temperature for testing agent detector systems comprising:

means for providing a regulated, pressurized air flow to an agent generator reservoir means;

an agent generator reservoir means containing a dilute liquid agent solution through which air is passed to produce an agent-laden air stream;

temperature control means for maintaining a desired constant temperature of liquid agent solution within the reservoir means;

interconnected means for adding a regulated flow of air having a controlled relative humidity to produce a dilute agent-laden air having controlled conditions of relative humidity and temperature;

a combination mixing and testing chamber means for mixing the resulting dilute agent-laden air and providing dynamic exposure of an agent detector system disposed within said chamber to said agent; and

associated exhaust means for removing excess agent-laden air from said system.

4,269,058

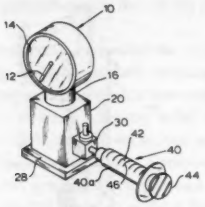
METHOD AND APPARATUS FOR DETERMINING THE ACCURACY OF A SPHYGMOMANOMETER

Stephan S. Richman, Winnetka, Ill., assignor to Marshall Electronics, Inc., Skokie, Ill.

Filed Oct. 22, 1979, Ser. No. 86,823
Int. Cl.³ G01L *27/00*
U.S. Cl. 73—4 R **10 Claims**

1. A method of calibrating and checking the accuracy of a sphygmomanometer pressure gauge comprising: removing a bellows-operated sphygmomanometer pressure gauge having a neck portion and an indicator and pressure indicia on a face thereof from a sphygmomanometer device; mounting said neck portion of said sphygmomanometer pressure gauge in an air tight manner on one end of a constant air passageway located in a body member, said passageway communicating at

an opposite end thereof with a source of variablee air pressure; generating an air pressure in said source of variable air pressure by compressing a selected air volume to a second selected volume within said air pressure source; determining said air pressure by the amount of compression and not by means of a pressure gauge; introducing said known air pressure from said



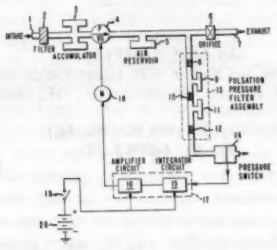
air pressure source through said passageway into said sphygmomanometer pressure gauge; monitoring the pressure reading from said face of said sphygmomanometer pressure gauge against said known air pressure; and adjusting said bellows of the sphygmomanometer pressure gauge to conform with said known air pressure.

4,269,059

DOSIMETER HAVING CONSTANT FLOW PUMP

William B. Baker, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 19, 1979, Ser. No. 21,810
Int. Cl.³ G01N *1/24*
U.S. Cl. 73—28 **10 Claims**



1. An improved dosimeter that has an intake port connected to a filter means in which particles or vapors present in an air stream being pumped through the dosimeter are collected on the filter means, a variable drive pump is connected to the filter means and draws the air stream through the filter means and pumps the air stream through the dosimeter, an electric motor is coupled to the variable drive pump and operates the pump, an electric power source is coupled to the electric motor, an air reservoir connected to the pump retains any excess air supplied by the pump to maintain a constant flow rate of the air stream, an orifice positioned in a tube attached to the air reservoir whereby a pressure drop is created when the air stream is pumped through the orifice, a differential pressure switch positioned before the orifice that is activated by a change in air pressure of the air stream and creates a low voltage electrical input signal; an integrator circuit electrically connected to the power source and to the pressure switch uses the low voltage input signal of the pressure switch and integrates this signal, an amplifier circuit electrically connected to the power source and the integrator circuit which amplifies the signal from the integrator circuit and feeds the amplified signal to the electric motor thereby controlling the speed of the motor driving the pump in relationship to the signal generated by the pressure switch to maintain the air stream at a constant flow rate; the improvement in use therewith comprises:

an accumulator positioned before and connected to the variable drive pump which retains air and maintains an even flow of air to the inlet of the pump and

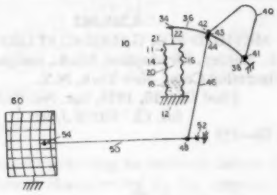
a pulsation air pressure filter assembly positioned between the orifice and the pressure switch which reduces pulsations in the air stream in contact with the pressure switch thereby limiting the activity of the pressure switch to substantial changes in air pressure of the air stream.

4,269,060

CONTINUOUS RECORDING OF VAPOR PRESSURE

Lancelot I. Kethley, 840 York St. #8, Oakland, Calif. 94610

Filed Dec. 28, 1979, Ser. No. 108,212
Int. Cl.³ G01W *1/06*; G01N *19/10*
U.S. Cl. 73—29 **2 Claims**



1. A device for continuously measuring the pressure of the vapor phase of a material within a gaseous mixture comprising:

a. A curved elongated relative humidity sensor within the predetermined gaseous mixture, the curvature of said sensor controlling a displacement of a portion of said sensor with respect to changes in the relative humidity of said gaseous mixture;

b. saturation vapor pressure sensor comprising a temperature sensitive element giving a displacement of a portion of said saturation vapor sensor an exponential response characteristic with respect to temperature;

c. a displaceable component and,

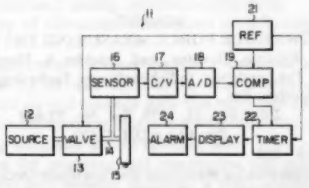
d. contrasting means acting on said displaceable component to contrast the temperature varying displacement with the relative humidity displacement, said contrasting means displacing said component as a function of the product of saturation vapor pressure and relative humidity experienced by the sensors.

4,269,061

LEAKAGE SENSOR APPARATUS FOR FLUID PASSAGEWAY

Hiroshi Hatsuno; Toshio Machida; Mitsuo Fukushima, and Shinji Ogawa, all of Higashi Matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Apr. 16, 1979, Ser. No. 30,231
Claims priority, application Japan, Apr. 24, 1978, 53-48419
Int. Cl.³ G01M *3/26*
U.S. Cl. 73—40 **12 Claims**



1. An apparatus for measuring a degree of leakage from a fluid passageway, comprising:

pressure sensor means connected to the passageway for producing an electric sensor signal corresponding to fluid pressure in the passageway;

pressure source means for applying fluid pressure of at least an upper predetermined value to the passageway;

valve means for disconnecting the source from the passageway when the pressure in the passageway is at least equal to the upper predetermined value;

comparator means responsive to the sensor means for comparing the sensor signal with first and second reference signals corresponding to the upper predetermined value of pressure and a lower predetermined value of pressure and producing first and second output signals respectively in response to coincidence thereof; and

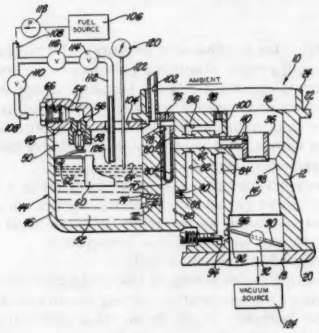
timer means for measuring a length of time between generation of the first and second output signals by the comparator means.

4,269,062

METHOD FOR GAUGING FLUID FLOW

Marion L. Smitley, Birmingham, Mich., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed Oct. 10, 1979, Ser. No. 83,464
Int. Cl.³ F02M *3/08*
U.S. Cl. 73—118 **10 Claims**



1. A method for establishing a preselected rate of fuel flow through the idle fuel metering system of a carburetor having a fuel reservoir, idle fuel discharge conduit means, and idle fuel discharge restrictor means wherein said restrictor means comprises an adjustable valve member and cooperating valve orifice, said method comprising the steps of supplying fuel to said fuel reservoir at a rate of flow equal to said preselected rate of fuel flow, and adjusting said adjustable valve member relative to said valve orifice in response to sensed variations of the fuel level in said reservoir so as to have the rate of flow of fuel passing through said idle fuel discharge conduit means and said restrictor means equal to the rate of fuel being supplied to said fuel reservoir.

4,269,063

DOWNHOLE FORCE MEASURING DEVICE

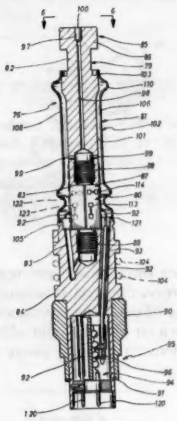
Pierre C. Escaron, Houston, and Joachim A. Hoppe, Spring, both of Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Sep. 21, 1979, Ser. No. 77,648
Int. Cl.³ E21B *47/00*
U.S. Cl. 73—151 **6 Claims**

1. An apparatus for measuring the downhole force applied to a cable suspending a well-logging apparatus in a borehole, comprising:

(a) an elongated sensitive element adapted to be connected between the cable and the well-logging apparatus to deform elastically under the effect of the downhole tension;

(b) strain gauge means integrally bonded upon the sensitive element for measuring the downhole force, wherein said strain gauge means includes at least one sputter deposited strain gauge; and



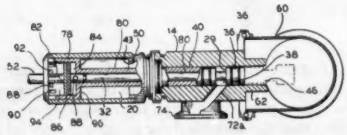
(c) means for compensating for pressure and temperature changes in the borehole, including an elongated envelope, having at least three sides, sealingly disposed about the strain gauge means and formed to allow said sides to deflect inwardly and outwardly from said strain gauge means in response to changes in pressure and temperature, said envelope being filled with oil.

4,269,064

ON-LINE SAMPLER

Julius T. Johnson, 348 20th St. S. E., Cedar Rapids, Iowa 52406, and Robert R. Johnson, 416 Jacolyn Dr. NW., Cedar Rapids, Iowa 52405

Filed May 31, 1979, Ser. No. 44,107
Int. Cl.³ G01N *1/12*
U.S. Cl. 73—422 TC **14 Claims**



1. Apparatus adapted to be mounted on a fluid conduit for sampling a fluid flowing through said conduit, said sampling apparatus comprising:

a housing having an axial passage with an open end adapted to be in communication with the fluid flowing through said conduit;

a sample-taking means including a collapsible, annular sampling chamber of predetermined volume;

means for reciprocating said sample-taking means within said axial passage between a first sample-taking position wherein said sample-taking means projects from said open end of said axial passage and is exposed to the fluid flowing through said conduit and a second sample-discharge position wherein said sample-taking means is withdrawn within said axial passage;

said annular sampling chamber of predetermined volume being defined by the inner wall of said axial passage when said sample-taking means is reciprocated to its second

sample-discharge position, by the annular face of the end of a tubular member reciprocably mounted in said axial passage, by an opposed annular face of a sampling piston mounted on a piston rod reciprocably mounted in said tubular member and extending therethrough, and by said piston rod extending between said sampling piston annular face and the opposed annular face of the end of said tubular member;

drive means operatively connected to said sample-taking means to reciprocate one of said sampling piston or said tubular member away from and towards the other between extreme positions whereby, when said sample-taking means is reciprocated to its second sample-discharge position, said sampling chamber of predetermined volume will be collapsed to a position where said sampling piston annular face and the opposed annular face of the end of said tubular member are substantially in face-to-face contact, and whereby when said sample-taking means is reciprocated to its first sample-taking position said sampling chamber will be expanded back to its predetermined volume; and

a fluid discharge means in said housing communicating with said sampling chamber when said sample-taking means is reciprocated to its second sample-discharge position whereby the predetermined volume of sampled fluid will be discharged into said fluid discharge means upon the collapse of said sampling chamber.

9. Apparatus for sampling a fluid flowing through fluid conduit means comprising a sampler adapted to be mounted on said conduit means; said sampler embodying a housing having an axial passage with an open end portion adapted to be in communication with fluid flowing through said conduit means; sample-taking means with opposed annular faces normally spaced apart at a constant, predetermined spacing, said spaced, annular faces forming, in conjunction with the wall of said axial passage, a collapsible, annular sampling chamber of constant, predetermined volume; means to reciprocate said sample-taking means within said passage between a first position wherein the sampling taking means, with its opposed, annular faces spaced apart at said constant, predetermined spacing, projects at said open end portion of said passage into the fluid in said conduit means and a second position wherein said sample-taking means, with its opposed, annular faces spaced apart at said constant, predetermined spacing, is within said passage and said annular sampling chamber of constant, predetermined volume is thereby formed; drive means operatively connected with said sample-taking means to bring said opposed, annular faces into substantially face-to-face contact and thereby substantially completely collapse said sampling chamber when it is in sample discharge position within said passage; and fluid discharge means in said housing for discharge of the sampled volume of fluid from said passage under positive pressure upon the collapse of said sampling chamber, said annular sampling chamber being defined by said axial passage, by the annular face of the end of a tubular member reciprocably mounted in said axial passage, by an opposed annular face of a piston mounted on a piston rod reciprocably mounted in said tubular member and extending therethrough, and by said piston rod, and said drive means being operable to move one of said sampling piston and said tubular member toward and away from the other between extreme positions providing said substantially face-to-face contact and said constant, predetermined spacing.

4,269,065

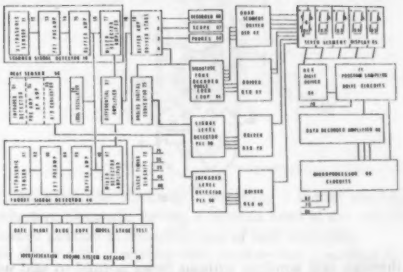
ULTRASONIC DETECTOR APPARATUS

Robert N. Clark, 530 E. Lime, Lakeland, Fla. 33800

Continuation-in-part of Ser. No. 882,361, Mar. 1, 1978, abandoned, which is a continuation-in-part of Ser. No. 798,821, May 20, 1977, abandoned, which is a continuation-in-part of Ser. No. 698,011, Jun. 21, 1976, abandoned. This application Aug. 16, 1979, Ser. No. 67,149

Int. Cl.[3] G01H *1/00*

U.S. Cl. 73—587 **8 Claims**



1. An apparatus for detecting an incipient failure of equipment which failure is characterized by the emission of ultrasonic signals from the equipment wherein the signals have a specific ultrasonic frequency distribution about a primary frequency, comprising, in combination:

a first ultrasonic sensor for receiving the primary frequency signal generated by the equipment;

a local oscillator for generating a signal selected to be a predetermined frequency difference relative to the primary frequency signal; and

a second ultrasonic sensor for receiving ambient background noise operatively connected to said apparatus to substantially cancel ambient background noise, whereby said primary frequency will be better observed; and

a mixer detector amplifier operatively connected to receive the outputs of said first and second ultrasonic sensors and of said local oscillator whereby the differences between said outputs may be detected to provide a demodulated frequency within a predetermined bandpass; and

a means for processing said demodulated frequency.

4,269,066

ULTRASONIC SENSING APPARATUS

Christopher L. Fischer, 1438 Wildrose Way, Mountain View, Calif. 94040

Filed Aug. 16, 1979, Ser. No. 67,115

Int. Cl.[3] A61B *10/10*; **G01N** *29/00*

U.S. Cl. 73—639 **13 Claims**

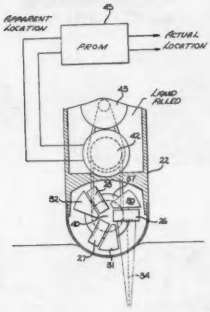
1. An ultrasound sensing apparatus comprising:

a plurality of ultrasound transducers each having a beam axis;

a rotating member for receiving said transducers, said member having an axis of rotation, said transducers being mounted on said member such that said beam axis of each of said transducers is spacedly offset from and non-intersecting with, said axis of rotation; and

a housing for receiving said transducers and said rotating member, said housing including a transmission window through which said beam axis of each of said transducers sequentially crosses as said member rotates about said axis of rotation;

each of said transducers being selectively actuated, whereby ultrasound associated with said transducers passes



through said window without being normal to said window.

4,269,067

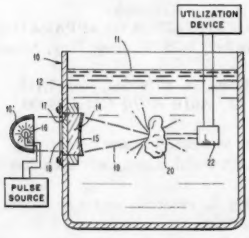
METHOD AND APPARATUS FOR FOCUSING ELASTIC WAVES CONVERTED FROM THERMAL ENERGY

Eugene E. Tynan, Mahopac; Russell W. Dreyfus, Mt. Kisco, and Robert J. von Gutfeld, New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 18, 1979, Ser. No. 40,340

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—643 **28 Claims**



1. A transducer apparatus including:

a medium;

and unitary converting means within said medium to simultaneously convert pulses of thermal energy into acoustic waves for transmission through said medium and focus the acoustic waves.

4,269,068

ULTRASONIC COUPLANT COMPOSITIONS AND METHOD FOR EMPLOYING SAME

Orlando G. Molina, Westminster, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 444,432, Feb. 21, 1974, Pat. No. 3,915,885, and a continuation-in-part of Ser. No. 444,433, Feb. 21, 1974, Pat. No. 3,915,886, and a continuation-in-part of Ser. No. 521,730, Nov. 7, 1974, Pat. No. 3,939,092, and a continuation-in-part of Ser. No. 535,262, Dec. 23, 1974, Pat. No. 3,981,185, and a continuation-in-part of Ser. No. 580,442, May 23, 1975, Pat. No. 4,049,568. This application Aug. 13, 1975, Ser. No. 604,407

The portion of the term of this patent subsequent to Sep. 20, 1994, has been disclaimed.

Int. Cl.³ C09K *3/00*; G01N *29/04*

U.S. Cl. 73—644 **27 Claims**

1. A heat resistant biodegradable composition for ultrasonic inspection of surface and subsurface flaws and discontinuities in an object, in the form of a gel consisting essentially of (1) a biodegradable nonionic liquid surfactant as the sole liquid vehicle, said surfactant selected from the group consisting of (a) straight chain, primary, aliphatic oxyalkylated alcohols, wherein said alcohols can contain from 8 to 20 carbon atoms and the oxyalkyl groups are a mixture of ethylene oxide and propylene oxide groups, and (b) ethoxylates of linear secondary aliphatic alcohols, with the hydroxyl groups randomly distributed, the linear aliphatic portion of said alcohols being a mixture of alkyl chains containing in the range from 10 to 17 carbon atoms, and containing an average of from 3 to 12 moles of ethylene oxide, and (2) an amount of silica sufficient to convert said surfactant liquid into a gel.

15. A method for detecting surface and subsurface flaws and discontinuities in an object, which comprises applying to a surface of said object a water washable biodegradable heat resistant ultrasonic couplant composition in the form of a gel which consists essentially of (1) a biodegradable nonionic liquid surfactant as the sole liquid vehicle, said surfactant selected from the group consisting of (a) straight chain, primary, aliphatic oxyalkylated alcohols, wherein said alcohols can contain from 8 to 20 carbon atoms and the oxyalkyl groups are a mixture of ethylene oxide and propylene oxide groups, and (b) ethoxylates of linear secondary aliphatic alcohols, with the hydroxyl groups randomly distributed, the linear aliphatic portion of said alcohols being a mixture of alkyl chains containing in the range from 10 to 17 carbon atoms, and containing an average of from 3 to 12 moles of ethylene oxide, and (2) an amount of silica sufficient to convert said liquid surfactant into a gel, contacting a transducer of an ultrasonic testing device with said gel on said surface of said object, and transmitting ultrasonic energy through said gel and into said object to inspect said object and locate any surface or subsurface flaws, cracks or discontinuities in said object, and removing said ultrasonic couplant composition from said surface.

4,269,069

PRESSURE SENSOR, ESPECIALLY FOR INTAKE AIR SUCTION PRESSURE

Dieter Handtmann, Sindelfingen; Helmut Rau, Gerlingen, and Erich Zabler, Karlsruhe, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 23, 1980, Ser. No. 114,573

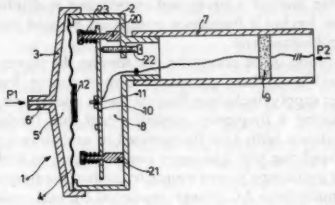
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1979, 2908808

Int. Cl.³ G01L *9/00*

U.S. Cl. 73—705 **6 Claims**

1. A pressure sensor, including a housing defining a movable pressure chamber which is connectable to a source of pressure to be measured, and further including transducer means for generating an electrical signal related to the magnitude of said pressure and wherein, according to the invention, said transducer means comprises a diffuse reflector (12) coupled to said movable chamber and a detector assembly (11) including a

light source (13), a first light-sensitive detector (17) and a second light-sensitive detector (18) for detecting light reflected by said reflector (12) and further comprising regulator means for so controlling the electrical power of said light source (13)



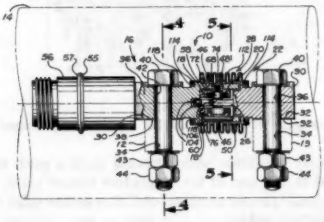
that the photo-current induced in at least one of said detectors (17,18) remains substantially constant independently of the prevailing distance (e) between said reflector (12) and said detector assembly (11).

4,269,070

STRAIN/DEFLECTION SENSITIVE VARIABLE RELUCTANCE TRANSDUCER ASSEMBLY

Harold K. Nelson, Seattle; Charles A. Kleingartner, and LeRoy E. Vetsch, both of Bothell, all of Wash., assignors to Weico Corporation, Lynnwood, Wash.

Filed Sep. 28, 1979, Ser. No. 80,048
Int. Cl.³ G01B 7/16
U.S. Cl. 73—779 **28 Claims**



1. A variable reluctance transducer assembly adapted to be mounted between two spaced apart, relatively movable mounting points subject to movement in response to a load, comprising:

(a) an elongate housing adapted to be mounted on one of the two mounting points to move therewith;

(b) a pair of magnetic cores supported by said housing in spaced apart relationship;

(c) a coil secured to each of said two cores substantially in aligned, spaced parallel relationship to each other; and

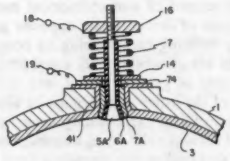
(d) target means adapted to be mounted on the opposite of the two mounting points to move therewith and independently of the movement of said housing, said target means including a mounting base and a magnetically permeable target cantilevered outwardly from said mounting base toward said housing to lie nominally in spaced relation with respect to said two magnetic cores and their corresponding coils, said target having a first planar surface disposed nominally parallel to the plane defined by one of said magnetic cores and its corresponding coil and a second planar surface disposed nominally parallel to the plane defined by the second of said two magnetic cores and its corresponding coil.

4,269,071

ELECTRODES FOR AN ELECTROMAGNETIC FLOW METER

Norikazu Wada, Chiba, Japan, assignor to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 832,872, Sep. 13, 1977, Pat. No. 4,181,013.
This application Apr. 11, 1979, Ser. No. 29,131
Int. Cl.³ G01F 1/58
U.S. Cl. 73—861.12 **4 Claims**



1. An electrode structure comprising a center electrically conductive electrode having a tapered head at one end and a threaded portion at the other end of said electrode,

an electrically insulating tube surrounding a portion of said center electrode including the sides of said tapered head while allowing at least a portion of said threaded end to project from said tube,

an outer electrically conductive electrode surrounding a portion of said tube at said tapered head end of said center electrode and

clamping means for compressing said center and outer electrodes against said insulating tube while maintaining said insulating tube therebetween,

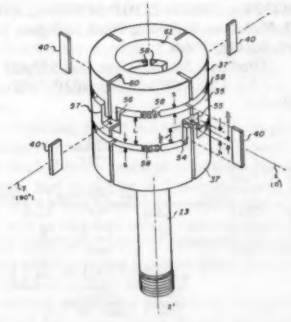
wherein said clamping means includes a nut on said threaded end of said center electrode projecting from said insulating tube, and electrically insulating washer means slidably mounted on said insulating tube and bearing on said outer electrode and a spring means between said nut and said washer means.

4,269,072

FLEXURE ASSEMBLY FOR A DYNAMICALLY TUNED GYROSCOPE

Damon H. Duncan, Phoenix, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed Feb. 14, 1979, Ser. No. 11,965
Int. Cl.³ G01C 19/22
U.S. Cl. 74—5 F **11 Claims**



1. A flexure assembly for a dynamically tuned flexure suspended free rotor gyroscopic sensor comprising

first and second axially spaced hollow, equal diameter cylindrical members, the first of said members being driven by a gyro spin shaft about a spin axis and the second of said

members supporting a gyro rotor normally coaxially with said spin axis,

a first hollow cylindrical gimbal member between said coaxial with said first and second members having a diameter substantially equal to said first and second cylindrical members and adapted to support said rotor on said spin shaft for tilting about first and second mutually orthogonal tilt axes normal to said spin axis, said gimbal and the first of said cylindrical members including a first pair of diametrically opposite gap-defining means and said gimbal and the second of said cylindrical members including a second pair of diametrically opposite gap-defining means, said gap-defining means being so constructed that all of said gaps are of substantially equal length and the centers of one pair of gaps lie along said first tilt axis and the centers of the other pair of gaps lie along said second tilt axis, each of said gap-defining means on said gimbal and first and second cylindrical members including elongated narrow slits collinearly extending from said gaps and into said gap defining means to an extent such as to provide separated, elongated flexure plate support surfaces, said slits being normal to said respective first and second axes, and

a thin, high strength, elongated flexure blade having its ends secured between each of said elongated narrow slits and its mid portion bridging each of said gaps, each of said blades having as nearly identical spring characteristics as possible whereby to provide substantially identical flexure characteristics between said gimbal and first and second members in response to angular tilt of said rotor about said first and second axes.

9. The method of fabricating a flexure assembly as defined in claim 1 comprising the steps of

partially forming in an elongated hollow cylindrical blank a pair of parallel axially spaced isolation slots through the walls of said blank for separating said blank into said first and second axially spaced cylindrical members and said gimbal member but leaving a plurality of web portions interconnecting said gimbal and members whereby to retain a substantially rigid integral structure,

forming said gap-defining means in said gimbal and first and second members,

forming said narrow slits in said gap-defining means,

assembling and securing said flexure blades in said slits, and finally

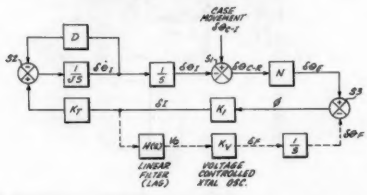
removing said interconnecting webs whereby to leave said gimbal flexibly interconnected between said first and second cylindrical members by said flexure blades.

4,269,073

GYROSCOPE CLOSED-LOOP SPEED CONTROLLER

Melville D. McIntyre, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jul. 24, 1978, Ser. No. 927,453
Int. Cl.³ G01C *19/08*; H02P *7/00*
U.S. Cl. 74—5.7 **23 Claims**



1. A gyroscope comprising:

a multiphase synchronous gyroscope motor including armature windings for receiving power from a suitable multiphase gyroscope power source and rotating the wheel of said gyroscope at a speed related to the frequency of the power received from said multiphase gyroscope power source;

a multiphase gyroscope power source, connected to said synchronous gyroscope motor, for: drawing power from a power supply; receiving a frequency control signal from a suitable control source; and, producing multiphase AC power having a frequency controlled by said frequency control signal; and

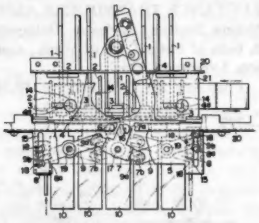
a closed-loop speed controller for: sensing the power drawn by said multiphase gyroscope power source from said power supply, including fluctuations in said drawn power; producing a frequency control signal that fluctuates in accordance with said fluctuations in said drawn power; and, applying said frequency control signal to said multiphase gyroscope power source to control the frequency of the multiphase AC power produced by said multiphase gyroscope power source.

4,269,074

CHANGEOVER MECHANISM FOR PUSHBUTTON TUNER

Takao Chaki, and Chuji Akasaka, both of 50 Kamitoda, Todashi, Saitama-ken, Japan

Filed Jun. 4, 1979, Ser. No. 45,068
Claims priority, application Japan, Jun. 6, 1978, 53-76152[U]
Int. Cl.³ H03J *5/12*
U.S. Cl. 74—10.33 **5 Claims**



1. A changeover mechanism for a pushbutton tuner comprising;

a plurality of button slides having each a push button secured at one end of the respective button slide;

auxiliary slide members disposed on opposite sides of each of the button slides;

lock members pivotally mounted on the button slides to rock thereon, respectively;

a changeover member adapted to engage the lock members and displaceable to change over the relationship between said lock members and said changeover member;

an operative member adapted to engage the changeover member and rotatable to displace said changeover member; and

operating means adapted to engage either one of opposite ends of the operative member to rotate said operative member for the displacement of the changeover member.

4,269,075

COUPLING ARRANGEMENT FOR DETACHABLY CONNECTING A DRIVEN UNIT TO A DRIVE UNIT

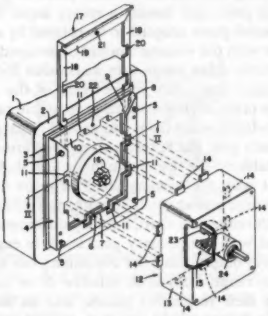
Gerald L. Crist, 6468 Hahn Rd., Bradford, Ohio 45308, and Arlen E. Flora, 4379 Childrens Home Rd., Greenville, Ohio 45331

Filed Apr. 16, 1979, Ser. No. 30,233
Int. Cl.³ F16H *57/02*
U.S. Cl. 74—16 **5 Claims**

1. A coupling arrangement for detachably connecting a driven unit, to which a tool is operatively connectable, to a drive unit, which is connected to the housing of a power source, said coupling arrangement comprising:

a frame which forms part of said drive unit, is open toward the center, is mounted to said housing, and has any desired shape, said frame including a first part which is continuous and is mounted directly to said housing, and a second part which has an open portion and is connected to said first part along at least part of the outer peripheral edges of both of said frame parts, said frame parts having inwardly directed portions spaced from one another to form a slot, said open portion of said second part forming an opening into said slot, each of said inwardly directed portions of said frame parts being provided with at least two essentially identically dimensioned grooves, corresponding grooves of said first and second frame parts being aligned with one another, said grooves being uniformly and symmetrically distributed in said frame parts, the width of a given groove on said first and second frame parts being less than the distance between two adjacent grooves;

a locking slide which has an open interrupted portion, is open toward the center, and has outer peripheral edges, those outer peripheral edges of said slide adjacent said open interrupted portion being shaped in conformity with the dimensions of said slot, so that said slide is adapted to be displaceably received, through said open portion of said second frame part, in said slot in such a way that when said slide is located in said slot, said open interrupted portion of said slide is diametrically opposite said open portion of said second frame part, said slide having



inwardly directed portions which extend inwardly, in the fully inserted state of said slide, to the same extent as do said inwardly directed portions of said frame parts, those inwardly directed portions of said slide adjacent said open interrupted portion being provided with grooves dimensioned and distributed essentially identical to said grooves of said frame parts, said slide having at least one not fully inserted state in said slot whereby said slide grooves are aligned with corresponding aligned grooves of said first and second frame parts;

means for retaining said slide and its fully inserted state in said slot;

a drive gear rotatably mounted to said housing in the vicinity of said open portion of said frame, said drive gear being operatively connected to said power source;

an adaptor forming part of said driven unit and including a housing, said housing having an outer dimension which conforms essentially to that part of said frame which is open to the center, said adaptor housing having an outer periphery provided with outwardly directed projections in the form of tangs, said tangs corresponding essentially in dimension, number, and symmetrical distribution to said grooves of said first frame part, so that said tangs are adapted to be received in said grooves of said first frame part; and

a driven gear rotatably mounted to and within said adaptor housing and operatively connectable to said tool, said driven gear being mounted and shaped in such a way that it operatively engages said drive gear when said tangs are received in said grooves of said first frame part.

4,269,076

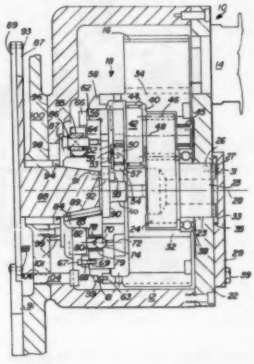
MOTION GENERATING MECHANISM

Bart Obra, St. Clair Shores, Mich., assignor to Easom Engineering & Manufacturing, Corp., St. Clair Shores, Mich.

Filed Jan. 18, 1979, Ser. No. 4,466

Int. Cl.³ F16H *37/12*

U.S. Cl. 74—52 **6 Claims**



1. A combined motion generating mechanism comprising:

a support frame;

a first rotary member carried by said support frame for rotation about a fixed first axis;

first driving means for driving said first rotary member;

a second rotary member carried by said first rotary member and rotatable therewith about said first axis as said second rotary member rotates about a second movable axis that is parallel to said first axis;

rotation inducing means carried by said support frame, a third rotary member for rotation about said first axis, said third rotary member being axially spaced from said first and second rotary members, said third rotary member having one side thereof adjacent said second rotary member, said one side having a radial slot;

a coupling member carried by said second rotary member and disposed along an axis which is spaced from said second axis, said coupling member movably engaging said third rotary member slot to rotate said third rotary member about said first axis as said second rotary member rotates whereby the motion of said third rotary member varies in a combined epicycloidal and harmonic manner relative to the acceleration and velocity of said first driving means;

said rotation inducing means is a stationary sun gear carried by said support frame, said second rotary member having a gear formed thereon positioned radially outward from the sun gear and engaging said stationary sun gear such that said second rotary member rotates about said second movable axis as said first rotary member moves said second rotary member relative to said stationary gear;

said coupling member being disposed along an axis which is spaced from said second axis; and

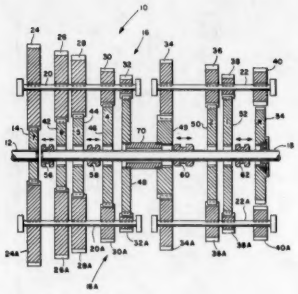
means for shifting an angular position of the combined epicycloidal and harmonic motion of said third rotary member relative to the position of the first member comprising the stationary gear rotatably supported about the first axis by the frame; an adjustment plate attached to a shaft of the stationary gear, the adjustment plate rotatable about the first axis with the stationary gear, and means for selectively attaching the adjustment plate to the frame.

4,269,077

CHANGE GEAR TRANSMISSION

John R. Vandervoort, Richland, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 30, 1978, Ser. No. 956,468
Int. Cl.[3] F16H 3/08
U.S. Cl. 74—331 7 Claims



1. An improved simple change gear transmission of the type comprising:

an input shaft having an input gear thereon; a mainshaft, said mainshaft guided for floating movement at the end thereof closest the input shaft and mounted for pivotal movment at the other end thereof; at least two substantially identical compound countershafts each having an axis of rotation substantially parallel with the axis of rotation of said mainshaft, each countershaft having a plurality of countershaft gears mounted thereon which are grouped with identical countershaft gears on the other countershaft, said coutershafts each having a first portion carrying a countershaft gear in engagement with said input

gear and a second portion; a countershaft gear on each of said first portions and a countershaft gear on each of said second portions in constant engagement with an idler means to establish a driving relation between said first and second portions, rotation of said input gear causing said first portions to have greater angular velocity than said second portions; a plurality of floating mainshaft gears surrounding said mainshaft and constantly meshed with and supported by a group of said countershaft gears; and clutch means for selectively clutching said floating mainshaft gears one at a time to said mainshaft, the improvement comprising:

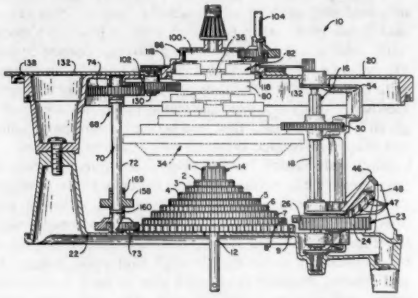
said idler means comprising an idler gear surrounding said mainshaft and constantly meshed with and supported by a group of countershaft gears on one of said first and second portions of said countershafts, and idler gear coupled by a coupling means for rotation with a floating mainshaft gear constantly meshed with a group of countershaft gears on the other of said first and second portions of said countershaft, said coupling means surrounding and radially movable relative to said mainshaft, the mainshaft gear closest the pivot point of the mainshaft being constantly meshed with a group of countershaft gears, selectively clutchable to the mainshaft and supported on the mainshaft by means of an antifriction bearing for radial movement therewith and rotational movement relative thereto.

4,269,078

EXTENDED RANGE VARIATOR CONVERSION MECHANISM

Raymond H. Devanney, Winsted, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed Aug. 29, 1979, Ser. No. 70,718
Int. Cl.[3] F16H 3/22
U.S. Cl. 74—348 6 Claims



1. In an extended range unit volume price variator settable for establishing the amount of each place of a multiple place unit volume price and having a rotary input with a primary stack of coaxial gears adapted to be rotated by a fluid meter in accordance with the volume amount of metered fluid; a plurality of rotatable drive range arm assemblies for a plurality of places of ascending order respectively of the multiple place unit volume price having respective rotatable range arm shafts with axes radially offset from and generally parallel to the axis of the primary gear stack, respective range arms pivotally and axially shiftable on the respective range arm shafts for selective engagement with the primary stack of gears for rotating the respective range arm shafts therewith, and a range arm output gear on each range arm shaft; a rotary differential gear mechanism coaxial with the primary gear stack in engagement with the range arm output gears for combining the rotatable drives through the range arms with relative drive ratios in accordance with their respective places; and an auxiliary higher place price selector mechanism for establishing a next higher place price to said plurality of places of ascending order and having an auxiliary rotatable drive take-off assembly with a rotatable take-off shaft generally parallel to and radially offset from the primary gear stack, a take-off shaft input gear driven by the rotary input and rotatably mounted on the take-off shaft for being coupled for directly rotating the take-off shaft therewith, and an auxiliary take-off shaft driven gear driven by the take-off shaft; a rotary auxiliary differential in operative engagement with said differential gear mechanism; and an auxiliary higher place selector with a shiftable selector lever shiftable between first and second positions thereof and a selector gear rotatably mounted on the selector lever for operatively interconnecting the auxiliary take-off shaft driven gear and auxiliary differential in the first position of the selector lever; the auxiliary differential being operable for combining the rotatable drives through the differential gear mechanism and selector gear with relative drive ratios in accordance with the respective places of the unit volume price and whereby, with the take-off shaft input gear coupled for directly rotating the take-off shaft, the selector gear is adapted to be selectively shifted to its first position for selectively establishing a said next higher place price of "1"; the improvement wherein the extended range variator further comprises a standby conversion mechanism for selectively converting the auxiliary higher place price selector mechanism for selectively establishing a said next higher place price of "2", the conversion mechanism comprising an auxiliary compound gear with first and second relative small and large diameter gears respectively, means for

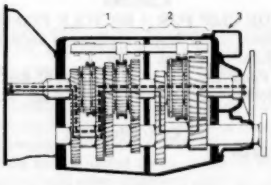
rotatably supporting the auxiliary compound gear with the first relatively small diameter gear thereof in operative engagement with said take-off shaft input gear to be driven thereby, a take-off shaft drive gear rotatably mounted on the take-off shaft in operative engagement with the second relatively large diameter gear of said compound gear and for being selectively coupled to the take-off shaft, and means for selectively coupling said take-off shaft input gear and said take-off shaft drive gear to the take-off shaft for selectively driving the shaft directly with said input gear at a first drive ratio and via the compound gear and said take-off shaft drive gear at a second drive ratio which is twice the said first drive ratio for selectively establishing a said next higher place price of "2" with the selector lever.

4,269,079

ARRANGEMENT FOR PREVENTING INCORRECT SHIFTING IN A VEHICLE GEARBOX

Sören Fredell, Göthenborg, and Stig Jarl, Mölnlycke, both of Sweden, assignors to AB Volvo, Göthenborg, Sweden

Filed Apr. 4, 1979, Ser. No. 27,092
Claims priority, application Sweden, Apr. 24, 1978, 7804650
Int. Cl.³ F16H *3/08*; B60K *41/06*
U.S. Cl. 74—365 **7 Claims**



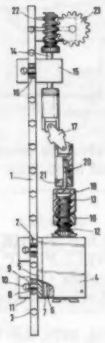
1. Arrangement for preventing incorrect shifting in a gearbox preferably intended for heavier motor vehicles, said gearbox having a base portion with a number of gear ratios and a two-speed range portion, coupled to the output shaft of the base portion, and having such gear ratios that the total gear ratio of the gearbox, when the higher gear ratio of the range portion is used together with the lowest gear ratio of the base portion, is higher than that when the lower gear ratio of the range portion is used together with the highest gear ratio of the base portion, the range portion having a gear selector mechanism coupled to a shift unit, said device comprising a first blocking system which is coordinated with the shift unit of the range portion and a gear selector mechanism of the base portion to oppose shifting in the base portion during the shifting movement of the shift unit in the range portion, and a second blocking system which is coordinated with means for sensing the rotational speed of the output shaft and with the gear selector mechanism of the base portion to prevent shifting to a certain gear or certain gears in the base portion when the rotational speed of the output shaft exceeds a certain value or certain values, characterized in that the first and the second blocking systems have a common blocking device, that the first system has means which sense the shifting movement of the shift unit, said means being disposed to activate the blocking device to block the gear selector of the base portion in the neutral position during the shifting movement, and that the second system has means for sensing the lateral position of the gear lever, said means being disposed, depending on the rotational speed of the output shaft, in the lateral position of first and second gear to actuate the blocking device to block the gear selector of the base portion in the neutral position.

4,269,080

COUPLING ARRANGEMENT FOR TRANSMITTING TORQUE

Artur Fischer, Weinhalde 34, 7244 Waldachtal 3 (Tumlingen), Fed. Rep. of Germany

Filed Jun. 25, 1979, Ser. No. 51,413
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1978, 2829268
Int. Cl.³ F16D *3/04, 1/00, 3/44*
U.S. Cl. 74—425 **9 Claims**



1. A coupling arrangement of a toy model for transmitting torque from a worm gear arranged on a shaft of a motor which is mounted on a structural plate, to a gearing element connected with an axle, comprising a Cardan joint having two end portions spaced from one another; first coupling means for coupling one of said end portions of said Cardan joint with the worm gear of the shaft of the motor, said first coupling means including a cap nut screwed on the worm gear of the shaft of the motor and connected with said one end portion of said Cardan joint, and a counter nut fixing said cap nut on said worm gear; and second coupling means for coupling the other of said end portions of said Cardan joint with the gearing element, said second coupling means including a structural element mounted on the mounting plate, and a driving shaft supported in said structural element, said driving shaft being connected with said other end portion of said Cardan joint and engaging the gearing element.

4,269,081

NEUTRAL POSITIONING DEVICE FOR A GEAR SHIFT LEVER

James F. Peterson, Franklin; Joe Crabtree, Lewisburg, and Donald C. Coleman, Gallatin, all of Tenn., assignors to The Murray Ohio Manufacturing Co., Brentwood, Tenn.

Filed Nov. 21, 1979, Ser. No. 96,330
Int. Cl.³ G05G *9/12*; F16F *1/18*
U.S. Cl. 74—473 R **4 Claims**

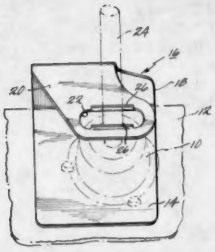
1. A device for resisting inadvertent actuation of a shift lever from a neutral position to a gear-engaging position, said device comprising:

a spring operatively associated with said lever, said spring including:

(a) a cantilevered main resilient section; and

(b) an extension joined to an outer end of the cantilevered main section and lying in a plane angularly related to that of the main section, said extension being provided with an elongated slot adapted to receive said lever and having a major axis extending parallel to the plane of

the main section, said spring being oriented with respect to the transaxle so as to urge the lever towards the



neutral position when the lever is displaced in a direction normal to said major axis.

4,269,082

RESETTING DEVICE FOR THE CAM HEAD ON A DEEP-WELL PUMP DRIVE

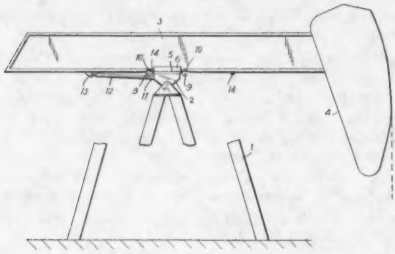
Hermann Engbers, Hoogstede OT Tinholt, Fed. Rep. of Germany, assignor to Wintershall Aktiengesellschaft, Kassel, Fed. Rep. of Germany

Filed Jun. 18, 1979, Ser. No. 49,785

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1978, 2828110

Int. Cl.³ G05G *1/04*

U.S. Cl. 74—522 **4 Claims**



1. A device for displacing the walking beam of deepwell pump drives comprising: a pivot bearing having a walking beam support; guide means for said walking beam; said walking beam support having long sides and narrow sides; sliding arrangements located on said narrow sides for slightly raising and supporting said walking beam during lengthwise displacement; a two way-shifting device hinged to said pivot bearing, a crank assembly; said two-way shifting device having another end connected to a part of said walking beam engaging said crank assembly.

4,269,083

CONNECTING ROD

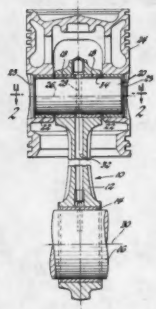
David M. Wandel, Farmington Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 27, 1979, Ser. No. 61,499

Int. Cl.³ G05G *1/00*; F16J *1/14*

U.S. Cl. 74—579 E **5 Claims**

5. A connecting rod assembly for a two-stroke cycle internal combustion engine having a crankshaft and a piton provided with a pair of co-axially spaced piston pin bushings, said assembly comprising a connecting rod member having a crankshaft bearing adapted to receive said crankshaft and further having a pair of co-axially spaced piston pin bushings, and a piston pin received by said bushings of said connecting rod assembly and adapted for reception by said bushings of said piston, wherein both the axis of said crankshaft bearing and the axis of said piston pin are normal to a line intersecting said axes, and wherein the axis of said piston pin is not substantially parallel



to the axis of said crankshaft bearing whereby limited lubrication clearance is alternately provided at opposite ends of said piston pin between said piston pin and said bushings during operation of said connecting rod assembly in said in said engine.

4,269,084

TOE CLIP FOR A BICYCLE PEDAL

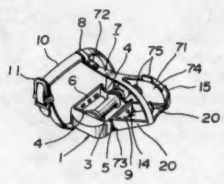
Shinpei Okajima, Sakai, Japan, assignor to Shimano Industrial Company, Limited, Osaka, Japan

Filed Aug. 10, 1979, Ser. No. 65,448

Claims priority, application Japan, Aug. 11, 1978, 53-110685[U]

Int. Cl.³ G05G *1/16*

U.S. Cl. 74—594.6 **3 Claims**



1. A toe clip for attachment to a bicycle pedal having a front and a rear plate for holding, in cooperation with a toe strap, a driver's foot onto said pedal, said toe clip comprising:

a clip body formed of an elongate plate curved forward at its substantially intermediate portion to form a curved portion having upper and lower ends and a first and second free end portion respectively extending rearwardly from the upper and lower ends of said curved portion, said second free end portion sloping downwardly to the rearmost end of said clip body, said rearmost end of said second free end portion at its lowest level terminating at the lowest level of said pedal front plate, said clip body being provided at both side edges thereof between the lower end of said curved portion and the rearmost edge of said second free end portion with a pair of rising sidewall pieces which are triangular in shape, each of said rising sidewall pieces having an upper surface which terminates substantially at the level of upper surfaces of said front and rear plates of said pedal and being in horizontal continuation of the level of said upper surfaces so that, when said clip body is mounted on said pedal, said second free end

covers the front surface of said front plate of said pedal so as to introduce air flow rearwardly without striking against the front surface of said front plate, thereby reducing resistance against air flow; and, a holder provided at said first free end portion of said clip body for holding said toe strap;

said toe clip, when attached to a bicycle pedal, providing a reduced resistance against air flow.

4,269,085

DRIVE MEANS FOR A CASCADE EXTRUDER

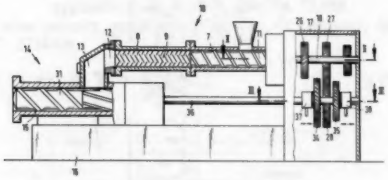
Dietmar Anders, and Wilhelm Brand, both of Hanover, Fed. Rep. of Germany, assignors to Hermann Berstorff Maschinenbau GmbH, Hanover Kleefeld, Fed. Rep. of Germany

Filed Oct. 2, 1978, Ser. No. 948,095

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1977, 2744337

Int. Cl.³ F16H *37/06*

U.S. Cl. 74—665 GA **6 Claims**



1. Drive means for two screw extruders combined in a cascade arrangement, comprising a drive motor acting through reduction gearing on a screw shaft of one stage of the extruder and through coupling gearing on a screw shaft of the other stage of the extruder, said coupling gearing including shift gearing comprising two gear wheels mounted on an intermediate shaft and respective opposed gear wheels meshing with said gear wheels and mounted on an extended drive shaft of said screw shaft of said other stage extruder, and clutch means for selectively and alternatively drivably coupling said two gear wheels and said opposed gear wheels to the shaft on which they are mounted, with the transmission ratios of the two pairs of meshing gear wheels differing one from the other, and means for operatively connecting said coupling gearing to said reduction gearing such that the speed of said screw shaft of said other stage of said extruder can be varied, thereby to obtain different speed ratios between said screw shaft of said one stage and said screw shaft of said other stage of the extruder.

4,269,086

SELF-LOCKING DIFFERENTIAL GEAR FOR MOTOR VEHICLES, ESPECIALLY BEVEL GEAR DIFFERENTIAL GEAR

Werner Altmann, Remchingen-Nöttingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

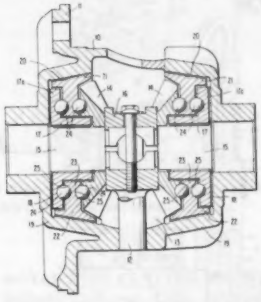
Filed Feb. 10, 1978, Ser. No. 877,030

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1977, 2706050

Int. Cl.³ F16H *1/44, 1/40*

U.S. Cl. 74—711 **12 Claims**

1. A self-locking differential gear means for motor vehicles, comprising a pair of output shaft means, a driven gear rotatably arranged on each output shaft means, locking means operatively connected to each driven gear for automatically locking the driven gear to a differential gear housing, characterized in that an abutment means is non-rotatably secured on each output shaft means for connecting each driven gear to its respective output shaft means, each of said driven gears is mounted so as to be rotatable relative to its associated abutment means, the respective locking means are disposed between said abutment means and the associated driven gear, and in that a further means is interposed between each driven gear and associated locking means and between each abutment means and associated locking means for retaining the respective locking means in an ineffectual position when a torque equilibrium exists between the driven gear and an associated output shaft means and for automatically transferring the respective locking means into an effective position upon a disturbance of the torque equilibrium.



4,269,087

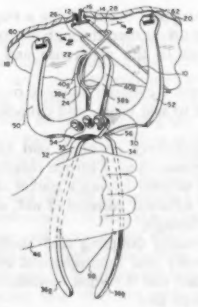
TOOL ASSEMBLY FOR MOUNTING A WIRE CLIP TO A GRID MEMBER OF A FALSE CEILING

Lawrence J. Wand, 6607 N. Ponchartrain, Chicago, Ill. 60646

Filed Feb. 27, 1979, Ser. No. 15,880

Int. Cl.³ B25B *7/00*

U.S. Cl. 81—5.1 R **9 Claims**

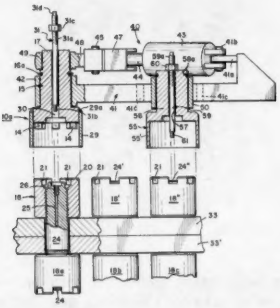


1. A pliers for mounting a tear drop shaped, wire spring clip with upper opposed laterally extending ends to a grid member of a false ceiling, said pliers comprising two elongate members, each elongate member having a handle portion and a jaw portion and being pivotally connected to the other elongate member at the junction between said handle portion and said jaw portion by a pivot fastener, said jaw portions being opposed to and aligned with each other and each jaw portion having an arcuate end section with a concave curved inner surface and with an elongate groove extending arcuately longitudinally of the end section in the concave inner surface thereof, and said groove facing and being aligned with a like groove in the opposing jaw portion, and the grooves in the arcuate sections of the jaw portions being sized and configured to readily grip the tear drop portion of a tear drop shaped wire spring clip.

4,269,088
WRENCH TOOLS FOR CASTELLATED NUTS

Bobby W. Dukes, Austin, Tex., assignor to N-S-W Corporation, Austin, Tex.

Filed Sep. 14, 1979, Ser. No. 75,620
Int. Cl.[3] B25B *13/46*
U.S. Cl. 81—57.39 5 Claims



1. A power tool for rotating one of a plurality of adjacently positioned castellated nuts threadedly connectable to studs, each nut having a body defining a plurality of radial slots therein, and each stud having a threaded axial hole, said tool comprising:

(1) a wrench driver positionable over one threaded castellated nut for transmitting a torque thereto, said wrench driver having

(a) a head,

(b) a plurality of radial lugs extending outwardly from said head for engaging the corresponding radial slots in said castellated nut,

(c) a skirt extending outwardly from said head for capturing a portion of the body of the castellated nut being torqued;

(2) a reaction-support beam having a ring loosely receiving said wrench driver therethrough for free relative rotations therebetween in the clockwise and counter-clockwise directions;

(3) a fluid-operated cylinder mounted over and being pivotably coupled to said beam, said cylinder having a reciprocating ram;

(4) means operatively coupling said ram to said wrench driver for transmitting a torque thereto;

(5) an anchor adapter having a socket anchorable over the body of an adjacent castellated nut, and having an axial bore therethrough;

(6) means movably coupling said anchor adapter to said beam, whereby said fluid-operated cylinder can exert a torque on said one threaded castellated nut through said wrench driver; and

(7) a retainer bolt extending through said bore into said threaded hole of said stud for longitudinally interconnecting said anchor adapter to said adjacent nut.

4,269,089
ADJUSTABLE RATCHET PLIERS

Charles E. Hastings, 3404 Paris Pl., Orlando, Fla. 32808

Continuation-in-part of Ser. No. 963,433, Nov. 24, 1978. This application Dec. 10, 1979, Ser. No. 101,552
Int. Cl.[3] B25B *7/04*
U.S. Cl. 81—410 R 5 Claims

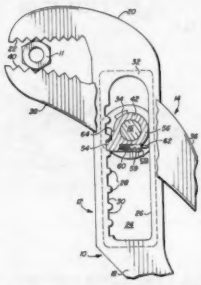
1. An adjustable ratchet pliers comprising in combination:

a first jaw member including a handle and a jaw portion, said first jaw member having an elongated slot formed therein and a plurality of notched positions formed in said elongated slot;

a second jaw member including a handle and a jaw portion, said second jaw member being pivotally coupled to said first jaw member;

slide track means formed along said elongated slot in said first jaw member, said slide track means including a sunken area on at least two sides of said elongated slot in said first jaw member;

slide means for sliding said second jaw member relative to said first jaw member, said slide means having a shaft and a sliding member, said shaft being connected to said second jaw member and extended through said elongated slot in said first jaw means, said slide member being attached to said shaft and slidably positioned on said slide track, and said slide means sliding member being a flat member sliding in said slide track means sunken area adjacent said elongated slot in said first jaw member;



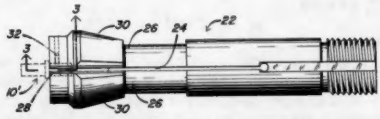
locking means pivotally mounted on said slide means shaft and extending into said elongated slot for engaging said notched positions therein, said locking means biasing means including a spring biased pin mounted in a bore in said locking means biasing said pin against the opposite side of said first jaw member elongated slot from said plurality of notched positions;

releasing means for rapidly releasing said locking means from a notched position,, said releasing means including a stop on said second jaw member for engaging a portion of said locking means when said first and second jaw members are rotated relative to each other to engage said stop on said second jaw with said portion of said locking means whereby said adjustable pliers can be locked into an adjusted position and rapidly released for changing positions.

4,269,090
METHOD AND APPARATUS FOR MARKING MINIATURE TURNED PARTS

Lawrence K. Ingber, Boston, and Francis J. Strangio, Watertown, both of Mass., assignors to Swisstronics, Inc., Watertown, Mass.

Filed Aug. 1, 1979, Ser. No. 62,738
Int. Cl.[3] B23B *3/00*; B31F *1/07*; B23B *5/22*
U.S. Cl. 82—1 C 2 Claims



1. A method for simultaneously machining a part to a predetermined configuration and embossing the part with a selected indicia, in a precision turning machine having tools for turning the part to a predetermined configuration and supplemental tools located at different work stations for performing second-

ary operations on the workpiece, said machine further including workpiece holding means adapted to grip the workpiece and transfer it to a subsequent work station in the machine, the method comprising:

simultaneously embossing the workpiece with a selected indicia during the operating cycle of the turning machine by providing a stamp bearing the indicia in the workpiece holder at a location which will emboss the indicia on the workpiece as the workpiece holder grips the work piece.

4,269,091

ARRANGEMENT FOR CUTTING GUIDED CYLINDRICAL SLEEVES

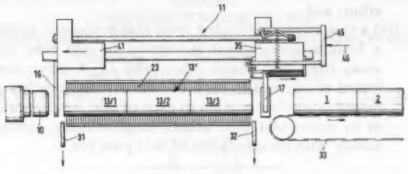
Otto Hodapp, Tuebingen, and Ulrich Lindner, Rottenburg, both of Fed. Rep. of Germany, assignors to Christian Majer KG Maschinenfabrik, Tuebingen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 911,304, Jun. 1, 1978. This application Sep. 5, 1979, Ser. No. 72,655

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1977, 2724936

Int. Cl.³ B23B *5/14, 15/00*

U.S. Cl. 82—48 **6 Claims**



1. A machine for automatically cutting and dividing cylindrical sleeves, comprising in combination,

a spindle operatively mounted in said machine;

a knife support beam having a plurality of rotary knives transversely movably mounted in said machine relative to said spindle;

a transport arrangement operatively mounted in said machine and adapted to transport uncut sleeve onto said spindle so that they may be cut and divided by said rotary knives and then transporting the cut sleeves from said spindle, said transport arrangement including a pair of oppositely movable end pressure members adapted to grip said cut and uncut sleeves therebetween;

a carrier sled transversely movably mounted in said machine relative to the axis of said spindle and having a pair of adjustable parallel sleeve receiving troughs adapted to be reciprocably moved between precisely defined relative positions with respect to the carrier and the rotary knife supporting beam for delivering uncut sleeves to said transport arrangement and receiving cut sleeves therefrom.

4,269,092

METHOD OF MICROTOMY UTILIZING VITREOUS CARBON BLADE

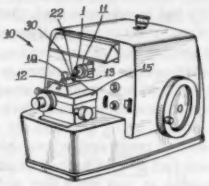
Dale R. Disharoon, 2480 Newcastle Ave., Cardiff, Calif. 92007, assignor to Dale R. Disharoon, Cardiff, Calif.

Filed Jul. 11, 1979, Ser. No. 56,469

Int. Cl.³ G01N *1/06*

U.S. Cl. 83—42 **9 Claims**

1. A method for sectioning a sample for microscopic examination comprising the steps of providing a sample to be sectioned, providing a microtome knife element comprising a vitreous carbon body having two intersecting substantially plane surfaces which intersect along a substantially linear



intersection edge, and cleaving said sample against said edge to provide a cleaved specimen of said sample.

4,269,093

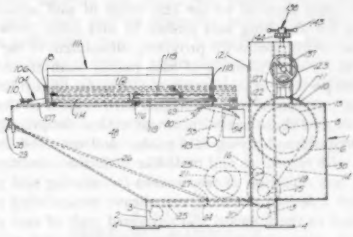
ROTARY DIE CUTTING MACHINE

Robert H. Nickum, Cincinnati, Ohio, assignor to Cincinnnati Rotary Press Company, Cincinnati, Ohio

Filed Mar. 29, 1979, Ser. No. 24,978

Int. Cl.³ B31B *1/20*

U.S. Cl. 83—174 **15 Claims**



1. A rotary die cutting and scoring machine having a rotatably mounted cylindrical die cutting roll including die means affixed to the outer surface of said roll, means for rotating said roll, a free wheeling rotatably mounted cylindrical anvil roll having a resilient outer surface overlying said cutting roll, the outer surfaces of said rolls making rolling contact for rotating said anvil roll in a direction opposite to the direction of rotation of said cutting roll, a horizontal planar table-like surface positioned adjacent said rolls for supporting a stack of sheets in order to feed the bottommost of said sheets between said rolls, a pusher for feeding said bottommost sheet, guide means attached to said table-like surface mounting said pusher for reciprocating movement in synchronism with the rotation of said cutting roll along said table-like surface parallel to the direction of sheet feed between a first position wherein said bottommost sheet is engaged by said pusher and a second position wherein the leading edge of said sheet is fed between said rolls, said guide means comprising a pair of spaced rail-like tracks extending along and attached to said table-like surface parallel to the direction of feed, said pusher comprising a horizontal plate-like truck including a first set of wheels rotatably supported on horizontal axles extending outwardly from the sides of said truck and a second set of wheels rotatably supported on vertical axles extending downwardly from said truck, said first set of wheels making rolling contact with the upper surfaces of said rails, said second set of wheels making rolling contact with the inside surfaces of said rails, said pusher mounting a plate-like support hingedly and pivotally attached to the leading edge of said truck and extending upwardly and rearwardly therefrom, said plate-like support being urged upwardly against the lower surface of said bottommost sheet and including a transversely extending raised lip configured to

abut the rear edge of said sheet, means for reciprocating said pusher between said first and second positions such that said pusher moves away from said first position with a relatively slow initial velocity but accelerates such that the velocity of the leading edge of said sheet substantially matches the peripheral speed of said cutting roll as said leading edge is fed between said rolls, said reciprocating means comprising a first crank arm having one end non-rotatably attached to said cutting roll for rotation therewith, a pitman having one end rotatably attached to said first crank arm and the other end pivotally attached to a second crank arm, a rotatable shaft non-rotatably secured to one end of said second crank arm extending beneath and transverse to said table-like surface, adjustment means associated with at least one of said crank arms for changing the movement of said pusher, an upstanding rocker arm connected to said shaft terminating at its upper end in a downwardly concave arcuate plaste, said rocket arm being imparted with a rocking motion in synchronism with the rotation of said cutter roll, a cable having one end secured to the forward edge of said arcuate plate and extending rearwardly in a direction parallel to said direction of feed, first sheave means rotatably attached adjacent the rear part of said table-like surface, said cable passing around said first sheave means and continuing in a forward direction, second sheave means rotatably attached adjacent the forward part of said table-like surface, said cable passing around said second sheave means and continuing in a rearward direction, the opposite end of said cable being secured to the rear edge of said arcuate plate, means for attaching said pusher to said cable between said sheave means, means for providing adjustment of the location of said forward position of said pusher with respect to the angular position of said cutting roll in order to correctly register the position of said die means with respect to the leading edge of said sheet, said adjustment means comprising a plate-like support underlying said pusher and mounted for movement with respect to said table-like surface in directions parallel to said direction of feed means for moving said plate-like support a desired distance, said sheave means being rotatably attached to the forward and rearward ends of said plate-like support, respectively, means for positioning and guiding the side edges of said blanks comprising a pair of spaced plate-like side guides extending parallel to said direction of feed and a pantograph-like operating mechanism, the inner surfaces of said side guides being configured to abut the side edges of said sheets, each of said guides being independently movable in a direction transverse to said direction of feed so that said inner surface remains parallel to said direction of feed throughout the range of movement of said guide, said operating mechanism comprising a pair of arms each having one end pivotally attached at spaced locations to the outer surface of said guide, each arm having its distal end pivotally attached to said table-like surface and terminating in an outwardly extending member, a connecting link pivotally connecting the outermost ends of said members, a clamp affixed to said table-like surface for restraining movement of said link to lock said guide in a desired position, and means for removing a selected portion of said resilient material to produce a relatively smooth outer surface on said roll comprising a cutting tool mounted to contact said resilient surface and means for moving said tool in a direction parallel to the direction of rotation of said anvil roll.

4,269,094

DEVICE FOR PUNCHING HOLES IN TUBING

Kelso M. Long; Leonard Pharr, both of Ringgold, and Earl J. Pharr, Rossville, all of Ga., assignors to Burner Systems International, Inc., Rossville, Ga.

Continuation-in-part of Ser. No. 862,472, Dec. 20, 1977, abandoned. This application Sep. 17, 1979, Ser. No. 76,046

Int. Cl.[3] **B26D** *5/24;* **B21D** *28/28*

U.S. Cl. 83—188 **8 Claims**

1. Porting apparatus for punching holes in tubing apparatus, comprising:

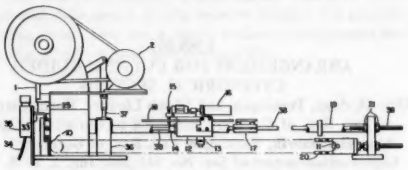
A. A base;

B. A plurality of punch arbors supported in side-by-side array upon said base, each punch arbor including:

(i) a reciprocably actuated vertical punch; and

(ii) a tube collar, aligned with said punch so as to circumferentially engage tubing being punched;

C. A plurality of corresponding tube arbors supported in side-by-side array and movably positioned upon said base away from said tube arbors, so as to engage an end of tubing being punched within said punch arbor, while moving longitudinally with respect to said punch arbor, each said tube arbor further including:



(i) a horizontal guide means concentrically aligning said tube arbor with respect to said tube collar;

(ii) a longitudinally extending guide, limiting longitudinal advance of said tube arbor with respect to said punch arbor; and

(iii) a stop means supported upon said horizontal guide as a limit to longitudinal movement of said tube arbor away from said punch arbor; and D. A drive means linked at one end to each of said vertical punches and linked in another portion to each of said tube arbors, so as to move said tube arbors longitudinally, synchronously with reciprocation of said punches.

4,269,095

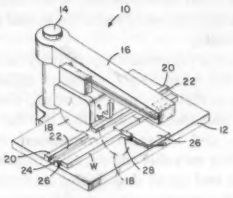
STOP MECHANISM FOR RADIAL ARM SAW

Bror Lundberg, Rte. 5, Box 1251, Camano Island, Wash. 98292

Filed Dec. 31, 1979, Ser. No. 108,806

Int. Cl.[3] **B27B** *27/02, 5/20*

U.S. Cl. 83—391 **6 Claims**



1. A stop mechanism for use with a radial arm saw of the type having a circular saw slidably mounted on an arm which extends horizontally above a planar table, said table having an elongated rail extending perpendicularly beneath said arm to allow an elongated workpiece running along said rail beneath said arm to be cut by moving said saw along said arm, said stop mechanism comprising:

an elongated infeed guide mounted on said table at one side of said arm, said guide having a planar guide surface extending parallel to said rail a first distance from said rail;

a stop member mounted on said table at the side of said arm opposite said infeed guide, said stop member being movable toward and away from said rail a second distance to respective extended and retracted positions, the distance between said rail and said stop member in its retracted position being greater than the sum of said first distance and the width of said workpiece so that the infeed end of a cut piece of said workpiece can clear said stop member in its retracted position, the distance between said rail and said stop member in its retracted position being less than

the sum of first distance, said second distance and the width of said workpiece so that the end of said workpiece strikes said stop member in its extended position, and the distance between said rail and said stop member in its retracted position being greater than the sum of said second distance and the width of said workpiece so that said cut piece can fit between said rail and said stop member in its extended position; and

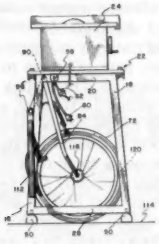
actuator means for selectively moving said stop member to its extended position as said workpiece is advanced along said infeed guide so that the end of said workpiece contacts said stop member, and for moving said stop member to its retracted position after said workpiece has been cut to allow said workpiece to be further advanced along said infeed guide while said cut piece passes between said stop member and rail as said stop member is once again moved to its extended position.

4,269,096

PORTABLE WORKSTAND

Harold B. Boone, R.R. #2, Box 767, Mulvane, Kans. 67110

Filed Aug. 20, 1979, Ser. No. 67,755
Int. Cl.³ B23D *47/02*; B62B *1/20*
U.S. Cl. 83—477.2 **12 Claims**



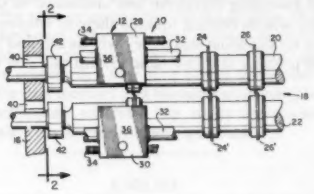
1. A portable workstand adapted for supporting power tools comprising an upstanding workstand having lowermost portions definitive of a horizontal plane and adapted to rest upon a supporting surface for supporting the workstand thereabove, said workstand having front and rear sides and also having a cavity therein, a wheel frame and support wheel rotatably mounted thereon for rotation about a horizontal axis, means mounting said frame to said stand for movement between a retracted position in which the frame and the wheel are received in the cavity and an extended position in which the wheel extends from within the cavity to a position projecting below said horizontal plane, and means for actuating movement of the latter between its retracted and extended positions, said actuating means comprising a pair of actuating handles operatively connected to the frame and pivotally mounted on the rear side of the workstand for limited pivotal movement about a horizontal transverse axis and which handles move from retracted positions thereof in which they are closely spaced to the rear side of the stand and depend from the transverse axis to extended positions thereof in which they extend rearwardly from the rear side of the stand when the frame is moved from its retracted position to its extended position, and means for releasably retaining the handles in their positions, whereby the stand can be wheeled about in wheelbarrow fashion by use of the handles and the wheel when the frame is in extended position.

4,269,097

SLITTER HAVING MEANS TO ADJUST SLITTER POSITION ON MOUNTING SHAFT

S. Stephen Linn, Marlton, N.J., assignor to Molins Machine Company, Inc., Cherry Hill, N.J.

Filed Apr. 5, 1978, Ser. No. 893,728
Int. Cl.³ B23D *19/00, 19/06*
U.S. Cl. 83—482 **10 Claims**



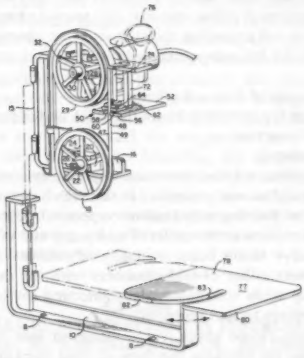
1. Apparatus comprising a frame, a rotatable shaft supported by said frame, a plurality of heads slideable along said shaft, means for selectively positioning said heads in predetermined locations along said shaft, said positioning means being supported by said frame for movement only in a direction parallel to the longitudinal axis of said shaft, said shaft having an operative position wherein said positioning means is incapable of moving said heads and an adjusting position wherein said heads are sufficiently close to said positioning means wherein they can be engaged by said positioning means, and means for pivoting said shaft about an axis parallel to its longitudinal axis between said operative position and said adjusting position, means for rotatably driving said shaft, said driving means permitting movement of said shaft between said operative position and said adjusting position.

4,269,098

PORTABLE BAND SAW

Peter H. Fogle, 1552 B Washington St. East, Charleston, W. Va. 25311

Filed Jan. 8, 1980, Ser. No. 110,317
Int. Cl.³ B23D *53/06*
U.S. Cl. 83—733 **7 Claims**



1. A portable band saw comprising:

a base;

a first upstanding support integral with the base;

a second upstanding support integral with the base;

a U-shaped frame pivotally supported on the first upstanding support;

a pair of spaced apart pulley wheels having means for rotatably attaching same to the U-shaped frame;

a saw blade extending between the pulley wheels and rotatable thereabout;

saw blade guide means attached to the U-shaped frame for guiding and supporting the saw blade;

a handle attached to the U-shaped frame;

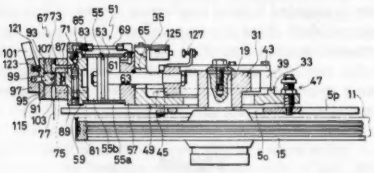
a saw table pivotably supported on the second upstanding support for supporting work to be cut; and

a motor attached to the U-shaped frame and having a drive shaft extending therefrom and connected to one of said pulley wheels causing rotation thereof, whereby said saw blade rotates about said pulley wheels and said work is cut upon pivoting said saw table toward said saw blade.

4,269,099
BANDSAW BLADE TENSIONING APPARATUS FOR HORIZONTAL BANDSAW MACHINES

Shuichi Saito, 990-12, Horinishi, Hadano-shi, Kanagawa-ken, Japan

Filed Jun. 29, 1979, Ser. No. 53,328
Claims priority, application Japan, Jun. 30, 1978, 53-89331[U]
Int. Cl.[3] B23D *55/10*; B27B *13/08*
U.S. Cl. 83—819 **2 Claims**



1. A tensioning apparatus for a bandsaw blade which is trained around a pair of wheels, with one wheel being supported on a carriage member which is movable relative to the other wheel, said apparatus comprising:

a hydraulic motor having a cylinder internally subdivided by a reciprocal piston into first and second chambers;

a piston rod extending through said first chamber and said cylinder for connecting said piston to said carriage member;

a reservoir of hydraulic fluid;

a pump for pumping hydraulic fluid under pressure from said reservoir;

valve means;

first and second conduit means respectively connecting said first and second chambers to said valve means;

third and fourth conduit means respectively connecting said valve means to the outlet of said pump and said reservoir;

said valve means being manually adjustable to alternately connect either of said chambers with the outlet of said pump while simultaneously connecting the other of said chambers to said reservoir;

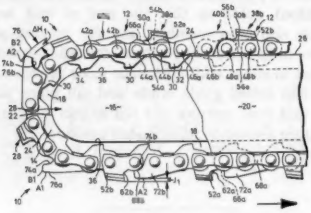
normally closed check valve means in said first conduit means for blocking the flow of fluid therethrough from said first chamber, said check valve means being adjustable to an open position in response to fluid pressure from the outlet of said pump; and,

additional conduit means for connecting said second conduit means to said check valve means, thereby opening said check valve means to permit flow of fluid from said first chamber through said valve means to said reservoir as pressurized fluid is fed from said pump outlet through said valve means to said second chamber.

4,269,100
SAW CHAIN

Hayo E. Deelman, and Gordon S. Porritt, both of Victoria, Canada, assignors to Windsor Machine Company Limited, Burnaby, Canada

Filed Jan. 22, 1979, Ser. No. 5,594
Claims priority, application Canada, Nov. 30, 1978, 317150
Int. Cl.[3] B27B *33/14*
U.S. Cl. 83—834 **10 Claims**



1. In saw chain including a series of aligned drive link segments pivotally interconnected forwardly and rearwardly on common pivot axes to a series of aligned connecting link segments and in which certain of said segments present integral allochiral cutter tooth portions in selected spaced relation along said saw chain, each such later mentioned segments (of) presenting associated bearing surface formations (located) forwardly and below said cutter tooth portions and uppermost over their forward common pivot axes, the other of said link segments located in advance thereof having integral trailing extensions of selected configuration overlying said bearing surface formations and matingly engageable thereupon during substantial straight-line path of travel to urge same downwardly, said trailing extensions projecting above said bearing surface formations a selected extent to a limit position forwardly and below said following associated cutter tooth portions to thereby function as a depth gauge, said trailing extensions being adapted to swing about their respective pivot axes through a selected angle upwardly and forwardly out of said mating engagement with said bearing surface formations in accordance with a selected substantially uniform change in direction of the said chain dictated by a change from a straight-line path of travel to a curvate path of travel whereby said trailing extensions effectively limit penetration of said cutter portions throughout the curvate path of travel.

4,269,101
APPARATUS FOR GENERATING THE COMPLEMENT OF A FLOATING POINT BINARY NUMBER

Ralph Deutsch, and Leslie J. Deutsch, both of Sherman Oaks, Calif., assignors to Kawai Musical Instrument Mfg. Co., Ltd, Hamamatsu, Japan

Filed Dec. 17, 1979, Ser. No. 103,896
Int. Cl.[3] G06F *7/52*; G10H *5/00*
U.S. Cl. 84—1.01 **8 Claims**

1. A complementer apparatus for forming an output number in binary floating point number form having an output mantissa and output power corresponding to the complement of an input binary floating point number having an input mantissa and input power, comprising;

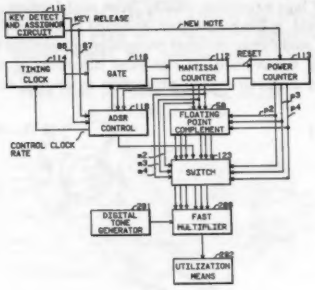
power decode logic means responsive to power bits of said input binary floating point number for decoding power bits to a plurality of power signals wherein each power signal corresponding to the decimal equivalent of said power bits,

power signal level means responsive to said power signals whereby a level signal is generated if said power signal corresponds to a decimal equivalent of said power bits less than a preselected decimal equivalent,

power bit select means responsive to said level signal

whereby the power bits of said output number are given preselected values if said level signal is generated,

power bit generation means responsive to said level signal whereby if said level signal is not generated a power is created in binary form for said output number corresponding to the number of the most significant bits of said input mantissa having a unit binary value,



first complement mantissa means responsive to said level signal whereby if said level signal is not generated an output mantissa is created for said output number corresponding to the position of a zero binary value in said input mantissa, and

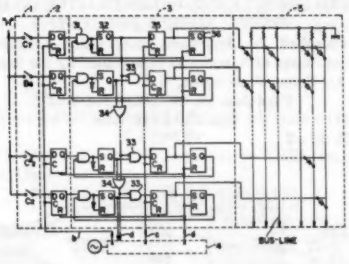
second complement mantissa means responsive to said level signal whereby if said level signal is generated an output mantissa is created for said output number responsive to said input mantissa and said input.

4,269,102

KEY ASSIGNOR

Tatsunori Kondo, and Hiroshi Kitagawa, both of Hammamatsu, Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

Continuation-in-part of Ser. No. 842,524, Oct. 17, 1977, abandoned. This application Mar. 31, 1980, Ser. No. 135,997
Claims priority, application Japan, Apr. 26, 1976, 51-47559
Int. Cl.³ G10H *1/00*; G08C *9/00*
U.S. Cl. 84—1.01 **2 Claims**



1. A key assignor with a keyboard multiplexer comprising:

a first memory for temporarily storing the state of key depression on a keyboard and producing key depression signals;

a multiplex code generator for generating key codes respectively corresponding to each key;

an inhibit circuit for controlling the key depression signals from the first memory;

a priority circuit for outputting from the first memory only the key depression signal of top priority in accordance with a preset priority of keys of the keyboard;

a second memory for temporarily storing the key depression signal selected by the priority circuit and having an output which causes the multiplex code generator to generate a key code corresponding to the key being depressed;

a third memory directly responsive to said output of the second memory for storing the key depression signal stored in the second memory, and providing a signal to the inhibit circuit to inhibit further key depression signals;

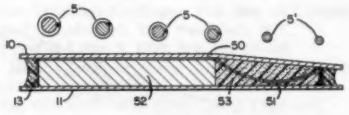
reset means for providing a write signal which resets the second memory after a predetermined period of time and causes the priority circuit to shift the priority of the keys of the keyboard, whereby a key depression signal of the next priority is processed, and wherein upon all depressed keys are processed, a new state of key depression is written in the first memory and the same processing is repeatedly performed, whereby key codes corresponding to depressed keys are sequentially generated.

4,269,103

ELECTROMAGNETIC PICKUP FOR STRINGED MUSICAL INSTRUMENTS

John F. Underwood, 6522 Lenneal Beach Dr., Orlando, Fla. 32810

Continuation-in-part of Ser. No. 657,266, Feb. 11, 1976, Pat. No. 4,050,341. This application Jun. 30, 1977, Ser. No. 811,721
Int. Cl.³ G10H *3/00*
U.S. Cl. 84—1.16 **28 Claims**



1. An electromagnetic pickup device adapted for musical instruments having elongated magnetizable vibrating elements with each of said vibrating elements having a different degree of magnetizability, said pickup device comprising:

(a) a single permanent rectangular bar magnet adapted to be disposed adjacent to vibrating elements having a lower degree of magnetizability, and

(b) a pickup coil surrounding said permanent magnet; the improvement comprising:

at least one metal plate means for varying the magnetic field of said permanent magnet in proportion to the degree of magnetizability of said vibrating elements; said metal plate means being adapted to be interposed between said permanent magnet and said vibrating elements, and extend from said magnet below said vibrating elements having a lower degree of magnetizability; whereby said magnetic field is varied in accordance with the magnetization of said vibrating elements thereby balancing the response from each vibrating element while achieving a pickup of the natural tone of each of said vibrating elements, and

said metal plate means is configured to provide a concave like surface facing said vibrating elements of higher degree of magnetizability.

4,269,104

HAND FLUTE AND PERCUSSION INSTRUMENT

Earl J. Cantos, Jr., 5249 Marlborough Dr., San Diego, Calif. 92116

Filed Nov. 23, 1979, Ser. No. 96,699
Int. Cl.³ G10D *7/02, 13/06*
U.S. Cl. 84—330 **6 Claims**

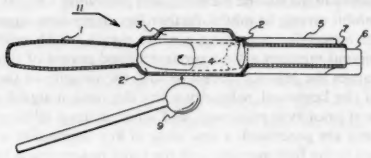
1. A musical instrument which comprises:

an oblong, hollow enclosure having at least one opening;

one face of said enclosure having a blister-like protrusion shaped and dimensioned to rest against the jawbone of a player when said face is pressed against the player's cheek;

said hollow closure being configured in the shape of a

human hand having a plurality of digits or tubular projections, at least four of said plurality of digits having openings in the terminal portions thereof to form fingerholes



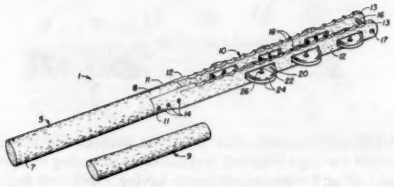
for egress of air flow and one of said plurality of digits having an opening in its terminal portion to form a blowhole configured in the shape of a thumb for egress of air flow.

4,269,105

MUSICAL PERCUSSION INSTRUMENT

James E. Salmon, 459-11th Ave., #1, San Francisco, Calif. 94118

Filed Jul. 5, 1979, Ser. No. 54,765
Int. Cl.[3] G10D *13/02, 13/06*
U.S. Cl. 84—402 **4 Claims**



1. A musical percussion instrument comprising:

a generally cylindrical, elongate dual purpose clave-handle, said clave-handle being of sufficient length to allow a portion thereof to be exposed when grasped by a user so that the exposed portion can be struck by the user to produce a first sound;

a carrier assembly fixedly attached to one end of said handle and relatively oriented to generally lie in a plane defined by said handle, the carrier assembly including at least one elongate carrier element having formed therein a plurality of apertures, said carrier element including at least one edge having serrations along at least a portion of said edge to produce a second sound when the user draws an object across the serrations; and

at least one disk-like jingle loosely mounted within each one of said plurality of apertures and relatively oriented transverse said carrier element so that when said handle or carrier assembly is shaken, said jingles will generate third sound.

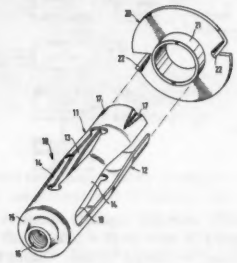
4,269,106

DOWEL FOR A HOLLOW WALL STRUCTURE

Erich Leibhard; Heinz Gruenewald, both of Munich, and Hanno Richter, Unterhaching, all of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Feb. 27, 1979, Ser. No. 15,611
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1978, 2809644
Int. Cl.[3] F16B *13/06*
U.S. Cl. 411—34 **9 Claims**

1. Dowel for attaching articles to the surface of a receiving material, such as a ceiling or a wall, which contains a hollow space inwardly of the surface through which the dowel extends and into which hollow space the dowel extends, said dowel comprising an axially extending tubular-shaped dowel body having a leading end which is inserted through the surface of the receiving material and into the hollow space, and a trailing end, said dowel body including an end part at the leading end thereof extending transversely of the axial direction of said dowel body and having a threaded opening extending therethrough with the axis of the opening extending in the axial direction of said dowel body, said dowel body including a pair of legs extending axially from said leading end to the trailing end, a flange member attached to the trailing end of said legs, said flange member comprising an annular flange part extending transversely of the axial direction of said dowel body and a sleeve-shaped projection extending substantially



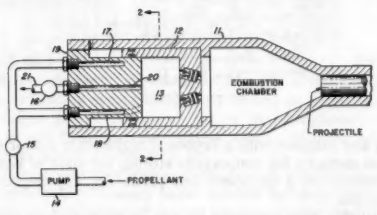
perpendicularly of said flange part, wherein the improvement comprises that said legs being in circumferentially spaced relation relative to one another in the axial diirection of said dowel body from the trailing ends thereof to adjacent said end part said sleeve-shaped projection and a portion of said legs extending from the trailing end thereof are axially coextensive, said sleeve-shaped projection extends into and between the trailing ends of said legs and said sleeve-shaped projection, said legs have radially inwardly directed recesses formed at the trailing ends with said recesses providing line contact extending in the axial direction of said dowel body with said sleeve-shaped projection, and said legs being resistance-welded to said sleeve-shaped projection along the line contact afforded by said recesses.

4,269,107

LIQUID PROPELLANT/REGENERATIVE CHARGING SYSTEM BUBBLE PREVENTER

John Campbell, Jr., Woodland Hills, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 19, 1979, Ser. No. 50,273
Int. Cl.[3] F41F *1/04*
U.S. Cl. 89—7 **1 Claim**



1. The improvement in the charging of cylindrical charging chamber of a rapid fire liquid propellant gun having liquid propellant introduced into the charging chamber through inlet and vent tubes traversing the breech plug, said improvement for removing entrapped gas in the liquid propellant comprising

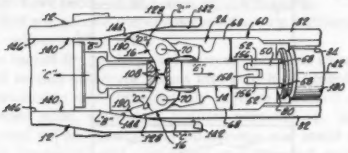
fabricating the said inlet tubes in the said breech plug at an angle and positioning the vent tube substantially on the central axis of the plug whereby the said liquid propellant is injected into the said charging chamber in substantially a tangential direction to the cylindrical inner wall of the said charging chamber and exhausting the said gas out the said vent.

4,269,108

PROGRAMMED SHELL CASING EJECTOR APPARATUS FOR AUTOMATIC CANNON

Eugene M. Stoner, Stuart, Fla., assignor to ARES, Inc., Port Clinton, Ohio

Filed Mar. 27, 1979, Ser. No. 24,184
Int. Cl.³ F41D *11/00*
U.S. Cl. 89—33 R **14 Claims**



1. In an automatic cannon having an axially reciprocating bolt assembly with extractor means operative for holding, during bolt assembly rearward travel after firing of the cannon, a fired shell casing to a forward face of the bolt assembly, and having a shell ejection opening located along the path of bolt assembly travel, programmed shell casing ejector apparatus, which comprises:

(a) an ejector member having a shell base engaging portion and an actuation portion;

(b) means for mounting the ejector member to the bolt assembly for axial movement relative thereto; and

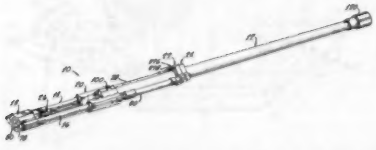
(c) ejector member camming means, including a relatively fixed cam track and an axially reciprocating cam track follower, configured for causing in response to the bolt assembly traveling rearwardly after firing of the cannon, the ejector member to move forwardly relative to the bolt assembly at a controlled velocity which is less than rearward velocity of the bolt assembly, a fired shell casing held to said bolt assembly face by the extractor means being ejected, in response to said relative forward movement of the ejector member, outwardly through the ejection opening in a controlled manner.

4,269,109

OPEN-FRAMEWORK RECEIVER AUTOMATIC CANNON

Eugene M. Stoner, Stuart, Fla., assignor to ARES, Inc., Port Clinton, Ohio

Filed Mar. 27, 1979, Ser. No. 24,186
Int. Cl.³ F41D *11/12*
U.S. Cl. 89—198 **12 Claims**



1. In an automatic cannon weapons system having shell feed means, triggering means and cannon mount means, an open-framework receiver cannon, which comprises:

(a) a cannon barrel having a shell receiving, breech end and a barrel bore axis;

(b) reciprocating bolt means for enabling feeding and firing of the cannon; and

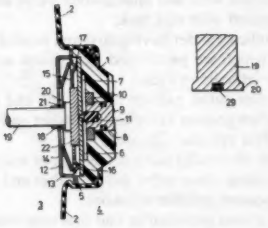
(c) means for supporting the barrel and bolt means in operative relationship with the shell feed means and triggering means, said supporting means including a breech ring having means defining a breech aperture axially therethrough configured for receiving the breech end of the barrel; first and second elongate, rigid support members having forward and rearward ends and intermediate portions therebetween, means for fixing said intermediate portions to the breech ring in laterally spaced apart, symmetrical relationship with longitudinal axes of the members parallel to the barrel bore axis when the barrel is received in the breech ring; forward support means for rigidly interconnecting the member forward ends with the barrel when the barrel is received in the breech ring; means for receiving the bolt means and for guiding reciprocating movement thereof and means for rigidly interconnecting rearward ends of the support members, said means for interconnecting rearward ends of the support members including sear means for enabling searing up of the bolt means at a rearward position thereof.

4,269,110

REACTION LEVER MECHANISM FOR A VACUUM BRAKE BOOSTER

Rolf Weiler, Frankfurt-Sindlingen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Apr. 9, 1979, Ser. No. 28,469
Claims priority, application Fed. Rep. of Germany, May 31, 1978, 2823784
Int. Cl.³ F15B *9/10*; F01B *19/00*; F16J *3/02*
U.S. Cl. 91—369 B **11 Claims**



1. A reaction lever mechanism for a vacuum brake booster comprising:

a control casing secured to a movable member separating a vacuum chamber and a working chamber of said brake booster;

at least two reaction levers engaging a rectangular indentation in said casing adjacent said vacuum chamber;

a reaction plate guided and secured against lateral displacement in a recess provided on each longitudinal side of said indentation, said recesses being asymmetric with respect to each other and a longitudinal axis of said casing, said plate engaging a side of said levers adjacent said vacuum chamber and including a step-like projection on each longitudinal edge thereof, each of said projections engaging a different one of said asymmetric recesses;

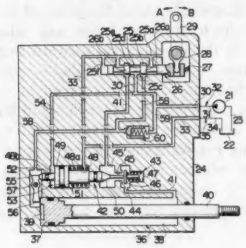
a cap secured to the outer edge of said casing adjacent said vacuum chamber having a guide sleeve therein extending into said vacuum chamber, said cap enclosing said plate and said levers; and

a master cylinder actuating push rod guided in said guide sleeve and having one end thereof abutting against said plate.

4,269,111
HYDRAULIC APPARATUS

Toshio Kamimura, Gifu, Japan, assignor to Teijin Seiki Company Limited, Osaka, Japan

Filed Aug. 29, 1979, Ser. No. 71,026
Claims priority, application Japan, Sep. 7, 1978, 53-110027
Int. Cl.[3] F15B *13/042, 13/16*
U.S. Cl. 91—419 3 Claims

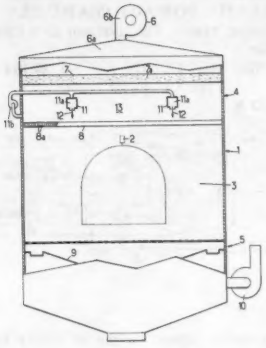


1. A hydraulic apparatus, comprising in combination:
a hydraulic pump, a reservoir tank connected with said hydraulic pump and a change-over valve;
a first fluid passage having one end connected with said hydraulic pump and the other end connected with said change-over valve; a second fluid passage having one end connected with said change-over valve and the other end connected with said tank;
a hydraulic cylinder having first and second cylinder chambers which are partitioned by a piston accommodated in said hydraulic cylinder;
a first inlet-outlet passage having one end connected with said change-over valve and the other end connected with said first cylinder chamber;
a second inlet-outlet passage having one end connected with said change-over valve and the other end connected with said second cylinder chamber;
a valve means provided in said first inlet-outlet passage and closable as fluid under pressure passing through said first inlet-outlet passage from said hydraulic pump comes to be dropped below a predetermined pressure, said valve means including a check valve permitting fluid under pressure to be introduced into said first cylinder chamber from said change-over valve, a biasing plunger disposed in opposing relation with said check valve and movable toward and away from said check valve, a compression coil spring resiliently urging said biasing plunger away from said check valve, and a pilot passage having one end connected with said first fluid passage between said hydraulic pump and said change-over valve and the other end connected with said biasing plunger to enable fluid under pressure to be introduced into said biasing plunger from said hydraulic pump so that said biasing plunger is moved toward said check valve to bias and open said check valve; and
a transmitting means transmitting a force generated by heat expansion of fluid under pressure in the first cylinder chamber to said biasing plunger so as to enable said biasing plunger to be moved toward said check valve against said compression coil spring so that said check valve is opened to cause fluid under pressure in said first cylinder chamber to be discharged therefrom.

4,269,112
ENCLOSURES FOR THE TREATMENT OF WORKPIECES

André G. Cordier, Montrouge, France, assignor to Air Industrie, Courbevoie, France

Filed Oct. 16, 1979, Ser. No. 85,422
Claims priority, application France, Nov. 15, 1978, 78 32300
Int. Cl.[3] B05C *15/00*
U.S. Cl. 98—115 SB 12 Claims

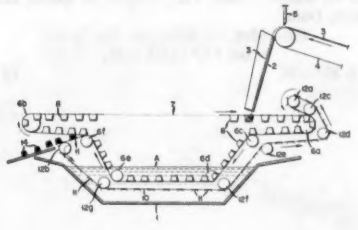


1. In a ventilated enclosure for the treatment of workpieces, particularly an elongated enclosure for painting workpieces, comprising a treatment space situated between a ceiling through which the supply of new air takes place and a floor, said ceiling comprising, particularly from upstream to downstream following the path of the air, filtering means and diffusion means, said enclosure being furthermore equipped with injection means, the improvements consisting in that these injection means are located in the ceiling between the filtering means and the diffusion means and arranged and disposed so as to deliver jets or sheets of air in one or more free spaces situated in the ceiling between the filtering means and the diffusion means.

4,269,113
APPARATUS FOR PRODUCING INSTANT CUPPED NOODLES

Masayuki Ishida, Chigasaki, Japan, assignor to Toyo Suisan Kaisha, Ltd., Tokyo, Japan

Division of Ser. No. 816,893, Jul. 18, 1977, abandoned. This application Aug. 7, 1978, Ser. No. 931,455
Claims priority, application Japan, Jul. 22, 1976, 51/87602
Int. Cl.[3] A47J *37/12*
U.S. Cl. 99—404 8 Claims



1. Apparatus for producing instant cupped noodles, comprising:
a plurality of liquid permeable metal cups, each having at least one opening for receiving a mass raw noodles therein, said cups each having an inclined or tapered wall,

said inclined or tapered wall extending between the top portion and the bottom portion of the respective cups, the bottom portion of the respective cups having a smaller cross-sectional area than the top portion thereof,

means for feeding a mass of raw noodles to each of said cups,

first conveyor means for successively conveying said cups to said feeding means for successively dispensing a mass of raw noodles in each of said cups, while said cups are in an upright position,

a plurality of liquid-permeable metal lids for selectively covering said at least one opening of each of said metal cups, respectively,

second conveyor means carrying said plurality of metal lids to respective positions in registration with respective ones of said plurality of metal cups for closing the respective openings of said plurality of metal cups after the metal cups have received said mass of raw noodles,

said first and second conveyor means having portions which are adjacent each other,

guide means for guiding said adjacent portions of said first and second conveyor means into a bath of heated oil for introducing said cups initially in their covered and inverted state, with their bottom portions up, into said heated oil and completely immersing said metal cups in said heated oil and conveying said inverted metal cups through said heated oil for frying said mass of noodles housed in said respective metal cups, said guide means then guiding said metal cups out of said heated oil, said cups being in their inverted state in said heated oil from the initial stage of heating until their exit from said heated oil to thereby cause said mass of noodles therein to be denser at the inverted bottom portion of the cup than at the upper portion of the cup, such that when the resultant product is placed in a complementary shaped serving container, with the denser noodle portion at the bottom, any condiment and liquid added to said serving container is more rapidly distributed from the top to the bottom,

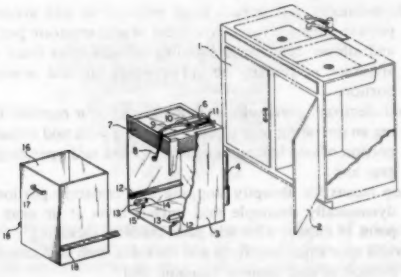
said guide means further comprising means for separating said first and second conveyor means after said metal cups are fed out of said bath of heated oil so as to remove said liquid permeable metal lids from the respective metal cups to permit the fried mass of noodles to be discharged from said metal cups.

4,269,114

FORCE-EXERTING MACHINE

Gail B. Schwarz, St. Louis, and Lawrence F. Hickinbotham, High Ridge, both of Mo., assignors to General Technology, Inc., St. Louis, Mo.

Filed Jan. 30, 1978, Ser. No. 873,656
Int. Cl.[3] B30B *15/16*
U.S. Cl. 100—53 **16 Claims**



1. A force-exerting device characterized by

(1) a housing, containing

(2) a plunger activated by

(3) a flexible expandable container capable of holding fluid and of expanding in volume from an original position under fluid pressure employed, and capable of maintaining hydraulic pressure and of returning to its original position upon release of said pressure,

(4) a single fluid opening to the flexible container, and

(5) means for exerting pressure to the fluid when it is in the flexible container by way of the fluid opening sufficient to magnify the applied pressure thus causing the plunger to exert the desired force,

(6) said housing providing space for a bucket to be inserted and to be positionable therein for opposing the motion of the plunger, when the bucket contains compactable material therein, as the plunger exerts its force,

(7) wheels on springs in the housing positioned to contact the bucket when positioned therein to aid its positioning in the housing and to support the bucket when positioned therein, and

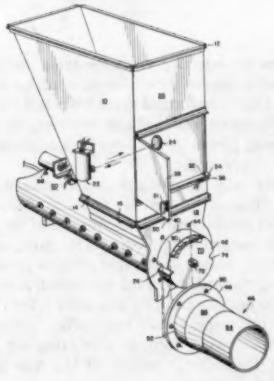
(8) said spring being so placed as to absorb in compression the force applied to the bucket and to the compactable material therein.

4,269,115

PISTON/CYLINDER TYPE ELEMENTS AND COMPACTORS EMBODYING THOSE ELEMENTS

Andor Gattyan, 242 Nelson Rd., Scarsdale, N.Y. 10583

Division of Ser. No. 851,017, Nov. 14, 1977, Pat. No. 4,188,873, which is a division of Ser. No. 766,405, Feb. 7, 1977, abandoned. This application Jan. 24, 1980, Ser. No. 114,860
Int. Cl.[3] B30B *15/08*
U.S. Cl. 100—98 R **14 Claims**



1. A refuse compactor comprising a ram mechanism having a cylinder, a correspondingly circular section ram element received with clearance within said cylinder, and at least two angularly spaced sets of cooperating guide means on said cylinder and ram element for guiding said ram element in longitudinal sliding movement in the cylinder, said ram element moving generally horizontally within said cylinder and said guide means being constituted as means supporting the weight of said ram element to reduce wear which would otherwise result from frictional interengagement of the lowermost portion of said ram element and said cylinder, each set of said guide means comprising a longitudinally extending track on one of said cylinder and ram element and cooperating track follower means on the other of said cylinder and ram element, adjustment means associated with said follower means, said adjustment means being effective to produce adjustment of one of said track and lower means radially of said cylinder whereby after wear produces a clearance between said track and follower means a guiding relationship between those parts can be restored by adjusting said follower means, wherein said adjustment means comprises bolt means permanently fixed to

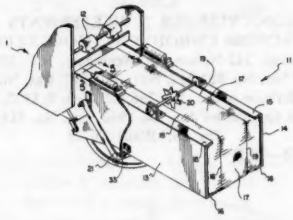
said follower means and extending through an opening of that one of the cylinder and ram element upon which the follower means is mounted, nut means mounted on said bolt means and securing said bolt means and said follower means to said one of said cylinder and ram element and shim means disposable about said bolt means for varying the position of said follower means relative to adjacent parts of said one of said cylinder and ram elements.

4,269,116

APPARATUS FOR DETECTING MALFUNCTION IN TYING OPERATION ON A BALER

Goss E. Gordon, 1544 Julie La., Twin Falls, Id. 83301, and David L. McMillen, Rt. 1, Eden, Id. 83325

Filed May 27, 1980, Ser. No. 153,162
Int. Cl.³ B65B *13/18;* B30B *15/00*
U.S. Cl. 100—99 **7 Claims**



1. Apparatus for detecting when the tying mechanism of a baler has failed to properly tie a twine, cord, or wire around the bale which has been formed in the baler and for producing an alarm for the operator of the baler that the tying mechanism is not functioning properly, said apparatus comprising:

a sensor needle or finger;

means for pivotally mounting the sensor needle to the bale forming chute of a baler, so that the sensor needle is adapted for pivotal movement over one of the surfaces of the bale of material being formed in the baler, whereby the sensor needle swings from a first position pointing generally toward the lead end of the bale which is being formed to a second position pointing across the bale in a direction generally transverse to the longitudinal axis of the bale and beneath a twine, cord, or wire extending lengthwise along the longitudinal surface of the bale of material which is being formed;

means for pivotally moving the sensor needle to swing from its first position to its second position as the tying mechanism of the baler begins its operation of tying the twine, cord or wire around the bale of material which has been formed in the baler;

means for holding the sensor needle in its second position beneath the twine, core, or wire which has been tied around the bale of material until the tied twine, core, or wire engages the sensor needle and swings the sensor needle back toward its first position as the bale of material moves toward the discharge end of the baler;

means for detecting when the sensor needle has been moved back toward its first position;

means for sensing the time interval between the time when the sensor needle swings to its second position and when it is swung back toward its first position by the twine, cord, or wire tied around the bale of material; and

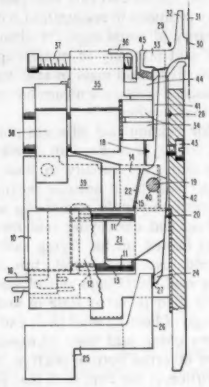
means for giving an alarm to the operator of the baler if the sensor needle has not been swung back toward its first position within a preset time interval.

4,269,117

ELECTRO-MAGNETIC PRINT HAMMER

Ho C. Lee, Endicott; David H. Rickenbach, Chenango Forks, and Jack L. Zable, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 11, 1979, Ser. No. 56,486
Int. Cl.³ B41J *9/42*
U.S. Cl. 101—93.02 **3 Claims**



1. A print hammer device for use in a high speed printer comprising:

a single piece hammer element having a flexible stem portion integrally connected to an armature portion and an impact mass carried at the remote end of said stem portion,

said stem and armature portions extending outwardly from a pivot axis through said armature portion,

said armature portion being part of an electromagnetic circuit having an operating air gap made variable by pivotal movement of said armature portion on said axis,

said stem portion having a flexibility which (1) allows oscillation of said impact mass relative to said armature during flight of said impact mass from a rest position to a point of impact with a print medium upon energization of said electromagnetic circuit and

(2) maintains said impact mass coupled to said armature portion during pivotal movement of said armature portion and allows dynamic decoupling of said mass from said armature portion by abrupt stopping of said armature portion,

said electromagnetic circuit including a stator member having an operating pole piece cooperable with said armature portion of said hammer element to form said operating air gap, and

stop means for abruptly stopping said armature portion to dynamically decouple said impact mass at or near the point of impact with said print medium including

a rigid spur extending from and movable with said armature portion of said hammer element, and

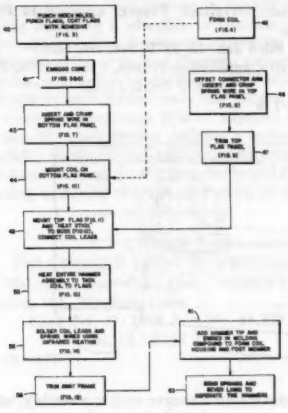
a stationary stop member located in the path of movement of said spur,

said stop member being positioned to engage said spur at a point which prevents crashing of said armature portion with said pole piece.

4,269,118
PRINT HAMMER ASSEMBLY METHOD

Val K. Jezbera, Thousand Oaks, Calif., assignor to Dataproducts Corporation, Woodland Hills, Calif.

Filed Dec. 11, 1978, Ser. No. 968,278
Int. Cl.[3] B41J 9/02; H01F 41/02
U.S. Cl. 101—93.34 29 Claims

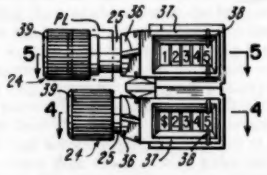


1. A method for making a hammer for a printer, comprising:
punching an elongated thin metal strip to form separate flag panels connected by tabs, each panel including a spring wire connector arm,
inserting spring wires into the connector arm of a first flag panel in said strip and into the connector arm of a separate second flag panel,
sandwiching a flat coil between said first flag panel and said second flag panel while maintaining said first flag panel connected in said strip,
connecting the leads of said coil to the respective connector arms of said first and second flag panels, and
embedding said sandwiched flag panels and coil in a molding compound.

4,269,119
SETTING KNOBS FOR SELECTIVE PRINT HEAD

Larry D. Strausburg, Miamisburg, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Aug. 27, 1979, Ser. No. 70,377
Int. Cl.[3] A61B 5/12; B41J 1/20
U.S. Cl. 101—111 10 Claims

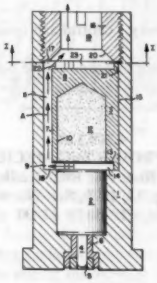


1. A print head, comprising: a plurality of lines of printing members for printing a plurality of lines of data, an axially shiftable and rotatable selector shaft for each line of printing members for selectively advancing any printing member in its line, a manually engageable knob mounted on each selector shaft for both rotating the selector shaft and axially shifting the selector shaft, each knob being non-rotatably mounted relative to the related selector shaft, adjacent knobs being relatively close to each other in certain axial positions, and means providing a lost-motion connection between each knob and its respective selector shaft to enable the knob to be pulled outwardly in the axial direction to a limited extent relative to any other knob to reduce interference with any other knob.

4,269,120
IGNITER ELEMENT WITH A BOOSTER CHARGE

Uwe Brede; Horst Penner, both of Furth, and Erich Zeiher, Furth-Vach, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Nov. 30, 1978, Ser. No. 965,052
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1977, 2753721
Int. Cl.[3] F42C 19/08
U.S. Cl. 102—202 14 Claims



1. An igniter unit for igniting of propellant charges, pyrotechnical mixtures, or the like, which comprises an external housing, an igniter element operatively associated with a booster charge, said igniter element being arranged within one end of the external housing, an internal housing which contains said booster charge and which is within said external housing, said internal housing having a closed, lateral wall and a closed base at one end which is spaced from the igniter element and which is located close to the other end of said external housing, said wall and base withstanding the ignition pressure caused by the generation of a cloud of gas during ignition of said igniter element and said booster charge; in the area of the other end of the internal housing, said internal housing defining at least one opening for permitting the flowing off of the cloud of gas produced by ignition of the igniter element and the booster charge and providing means for choking of said cloud of gas, and means providing at least one discharge duct that connects said at least one opening to the other end of the external housing whereby the cloud of gas is passed via said one opening and said discharge duct to the other end of said external housing.

4,269,121
SEMI-ACTIVE OPTICAL FUZING

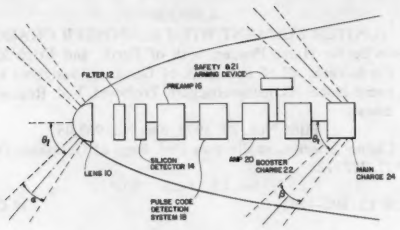
Irving I. Sochard, Chevy Chase, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 497,368, Aug. 12, 1974, abandoned. This application Jul. 31, 1978, Ser. No. 929,595
Int. Cl.[3] F42C 13/02
U.S. Cl. 102—213 31 Claims

1. A system for fuzing a detonator of a projectile of the type having a longitudinal axis and producing a plurality of fragments within a zone of densest fragmentation, comprising:
designator means for irradiating a target with a beam, the designator coupling to the projectile only via irradiance from the target;
means for fuzing the detonator after reception of irradiance

from the target while the projectile is traversing a trajectory terminating at a point beyond the target;

the means including a single detector sensitive to the irradiance within a limited field-of-view, coupled to the detector;



the field-of-view having a central axis coaxial with the longitudinal axis; and

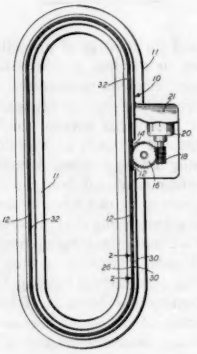
the field-of-view being matched to the zone of densest fragmentation.

4,269,122

MOTION PRODUCING MECHANISM

Daniel Crimaldi, 2002 Reservoir Rd., Reading, Pa. 19604

Filed Aug. 13, 1979, Ser. No. 66,238
Int. Cl.[3] B61B *13/00*
U.S. Cl. 104—167 **18 Claims**



11. An apparatus for moving an item along a predetermined path, comprising:

hollow holding means extending along said predetermined path, said holding means including an opening which also extends along said predetermined path;

helically threaded means provided inside said hollow holding means, said helically threaded means having a predetermined spacing between each of its threads;

drive means for meshing with the spacing between each of the threads of said helically threaded means to move said helically threaded means relative to said hollow holding means along said predetermined path; and

mounting means coupled to said helically threaded means including means extending through the opening in said hollow holding means for mounting said item on said helically threaded means,

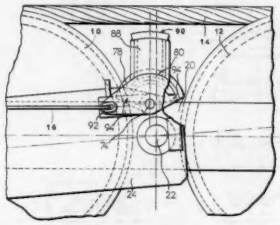
wherein said helically threaded means is a coil spring with a predetermined spacing between its coils, and said mounting means includes threads corresponding to said coil spacings, and is threaded into the interior of said coil spring, and further wherein said means extending through said opening comprises one or more pins which extend from said mounting means through the spacing between the coils of said coil spring.

4,269,123

SAFETY DEVICE FOR A ROCKER OF SHEAVES SUPPORTING AN OVERHEAD CABLE

Andre Segafredo, Seyssinet, France, assignor to Pomagalski S.A., France

Filed Jan. 22, 1979, Ser. No. 5,087
Claims priority, application France, Feb. 1, 1978, 78 03304
Int. Cl.[3] B61B *12/00*
U.S. Cl. 104—178 **3 Claims**



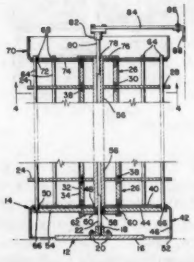
1. A safety device for a sheave rocker assembly, said assembly comprising: a pair of side plates articulated on a support spindle and supporting between them on opposite sides of said spindle two sheaves for supporting an overhead cable, said safety device comprising a crosspiece pivotably mounted between said sheaves above said spindle and arranged traversely of said side plates for equally engaging with said side plates upon their excess rocking movement in either of two rotating directions, a portion of said crosspiece projecting laterally of said side plates to form an area for catching a cable derailling from said sheaves, said crosspiece pivoting in response to movement of a derailed cable thereon to actuate a derailment detector, said crosspiece further including a projection having a bearing surface situated near and under a cable supported by the sheaves for supporting the cable upon loss of one or both of the sheaves and pivoting said crosspiece in response to movement of said cable thereon to actuate said detector.

4,269,124

MERCHANDISE DISPLAY RACK

Stanley H. Rosenthal, Rt. 2, Box 713, Air Harbor Rd., Greensboro, N.C. 27405, and George A. Poteat, Greensboro, N.C., assignors to Stanley H. Rosenthal, Greensboro, N.C.

Filed Oct. 1, 1979, Ser. No. 81,011
Int. Cl.[3] A47B *49/00*
U.S. Cl. 108—103 **8 Claims**



1. In a display apparatus, vertically disposed support means, base means mounting said support means for rotation relative

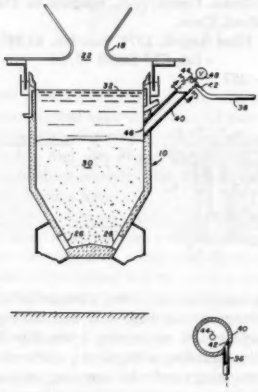
thereto, said support means including an elongated, vertically disposed column mounted for rotation upon said base means, said support means further including a plurality of vertically spaced, relatively thin, disk-like shelves, each defining a central opening therethrough for receiving said vertical column and a plurality of secondary openings therethrough equally spaced radially outwardly of said central opening, and spacer means surrounding said vertical column in spaced relation thereto and supporting said shelves in spaced relation, said spacer means including a plurality of discrete spacer units, each spacer unit including pin means projecting therefrom in opposite directions for extending through adjacent shelf secondary openings and for interlocking with adjacent spacer units, each spacer unit further including recesses therein for lockingly receiving projecting pins of adjacent spacer units, each said disk-like shelf further defining a series of openings spaced radially outwardly of said secondary, pin receiving openings adjacent the shelf outer periphery, and rod-like members extending vertically through said series of openings.

4,269,125

PULVERIZER REJECTS DISPOSAL

Gerald A. Mellinger, Bloomfield, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jul. 27, 1979, Ser. No. 61,325
Int. Cl.³ F23J *1/02*
U.S. Cl. 110—171 **3 Claims**



1. In a pulverized coal-fired steam generator having a furnace formed of a plurality of parallel, vertically extending water-filled tubes, a portion of the tubes being inclined inward towards each other from opposite sides so as to form an open trough extending across the bottom of the furnace, a pulverizer for pulverizing the coal to be fired in the furnace, and a water-filled bottom ash hopper having an open top disposed beneath the furnace so as to receive ash discharging from the furnace through the trough; an improved pulverizer rejects disposal assembly having means for conveying a slurry consisting essentially of pulverizer rejects, water and entrained air through a sluice pipe from the pulverizers to said water-filled bottom ash hopper, and separating means disposed at the discharge end of the sluice pipe for removing entrained air from the slurry prior to the slurry discharging into said water-filled bottom ash hopper, characterized in that said separating means comprises:

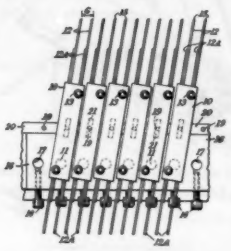
an elongated, capped top cylinder having a tangential inlet in the sidewall thereof for receiving the slurry discharging from the sluice pipe so as to produce a vortex swirl about the axis of said cylinder, a vent hole in the top thereof coaxial with the axis of said cylinder for releasing the separated air, and an open bottom opening into said water-filled bottom ash hopper at a point below the water level therein for discharging the air-free slurry therethrough, said cylinder inclined at an angle with the horizontal.

4,269,126

KNIFE BLOCK FOR A TUFTING MACHINE

Douglas G. Woodcock, Blackpool, England, assignor to Pickering Blackburn Limited, Lancashire, England

Filed Jun. 26, 1979, Ser. No. 52,322
Claims priority, application United Kingdom, Jul. 13, 1978, 29807/78
Int. Cl.³ D05C *15/24*
U.S. Cl. 112—79 R **2 Claims**



1. A knife block for a multi-needle tufting machine producing cut pile fabric, comprising a body member having a pair of opposed outwardly facing surfaces and at least one pair of opposed inwardly facing slots, a peg projecting from one of said outwardly facing surfaces for mounting said body member on a knife bar in the tufting machine, at least one pair of identical flat imperforate knives disposed in face-to-face contact in said body member with opposed edges of said knives received in said slots, one of said knives being an operative knife which projects from one side of said body member to cutting position and the other of said knives projecting from said one side of said body member to a lesser extent and acting solely as a back-up knife to support said operative knife against deflection when cutting a yarn, and at least one clamping screw mounted in said body member with an end of said screw engaging adjacent edges of both said knives to clamp said knives in said slots, whereby said back-up knife may be readily interchanged for said operative knife by unclamping and reclamping said screw when said operative knife becomes worn, and the extent of said back-up knife from said one side of said body member may be adjusted by unclamping and reclamping said screw for imparting the desired cutting tension and rigidity to said operative knife.

4,269,127

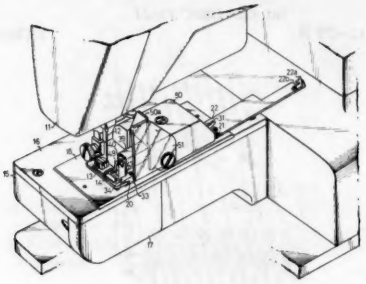
TRIMMING DEVICE FOR SEWING MACHINES

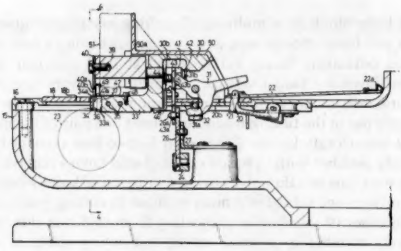
Osamu Kamiya, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jun. 8, 1979, Ser. No. 46,690
Claims priority, application Japan, Jun. 15, 1978, 53-72761
Int. Cl.³ D05B *37/00*
U.S. Cl. 112—122 **5 Claims**

1. A trimming device for a sewing machine having a bed including a work support surface formed with an opening, a cover plate for openably closing said opening, and a motion mechanism mounted in said bed and including a work feeding mechanism, said trimming device comprising: a frame formed with a projection arm, means for removably holding said frame on said bed with said projection arm situated in said opening, a lower stationary blade secured to said projection arm and having a cutting edge which is situated at substantially the same level as said work supporting surface, a vertically-extending gap being formed between said cutting edge and a part of said projection arm, an upper movable blade having a cutting

edge for trimming the marginal edge of a work fabric in cooperation with said cutting edge of said stationary blade, driving means mounted on said frame for reciprocating said movable blade up and down in timed relation with said motion mechanism in said bed, said driving means including locking means adapted to be operably connected with said motion mechanism at least when said frame is held on said bed, said cutting edge of said movable blade penetrating into said gap on the downward movement of said movable blade by the operation of said driving means, and a resilient plate secured at one end thereof to said projection arm for substantially covering said gap with the other end which is normally situated at substantially the same level as said cutting edge of said stationary blade, thereby on the downward movement of said movable blade said resilient plate is deflected into said gap by means of contact with said movable blade, and on the subsequent upward movement of said movable blade said resilient plate returns to the normal position.



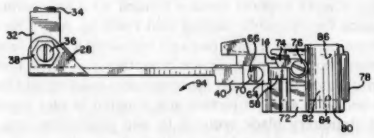


4,269,128

LOW INERTIA TANDEMLY MOUNTED PRESSER MECHANISM

Ronald J. Boser, Dix Hills, and Henry J. Watts, E. Northport, both of N.Y., assignors to Union Special Corporation, Chicago, Ill.

Filed Jan. 10, 1979, Ser. No. 2,433
Int. Cl.³ D05B *29/00, 27/04*
U.S. Cl. 112—235 **8 Claims**



1. For use with a sewing machine adapted to sew an elongated strip to a workpiece, said machine including stitch forming instrumentality means, feed mechanism means, a work support means, a pressure biased presser arm and a presser foot assembly comprising:

bifurcated member means attached to one end of said presser arm;

first presser foot sole means;

oscillatable link means for connecting said bifurcated member and said presser foot sole means, said link means being operatively disposed between said first presser foot sole means and said presser arm so as to preclude the pressure of said presser arm from being applied to said first presser foot sole means;

means for applying a variable force against the link means whereby urging the first presser foot sole means toward said work support means;

second presser foot sole means arranged independently of and in tandem with said first presser foot sole means, said second presser foot sole means being carried by said bifurcated member means such that it is flexibly mounted relative to said first presser foot sole means; and

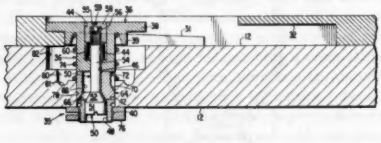
said pressure biased presser arm being effective to separately apply a force having a magnitude greater than the force magnitude applied against said first presser foot sole means for urging the second presser foot sole means toward said work support means.

4,269,129

RETRACTABLE RETAINING DEVICE FOR SEWING MACHINE SUPPORT PLATE

Edward J. Tullman, Union, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Aug. 6, 1979, Ser. No. 63,897
Int. Cl.³ D05B *75/06*
U.S. Cl. 112—257 **13 Claims**



1. A sewing machine comprising a frame including a bed and an arm overhanging said bed, said bed having a flat work supporting surface and supporting internally thereof sewing instrumentalities including a looptaker, said arm supporting an endwise reciprocating needle bar carrying on an end thereof a sewing needle for cooperation with said looptaker in the formation of stitches, and means supported in said bed for retaining a plate for supporting auxiliary devices, said retaining means having a retaining portion held by a latch device at a selected one of two stable positions including a first stable position substantially flush with said work supporting bed and a second stable position exposing said retaining portion for retaining said supporting plate.

4,269,130

SHEET PRODUCTION SYSTEM

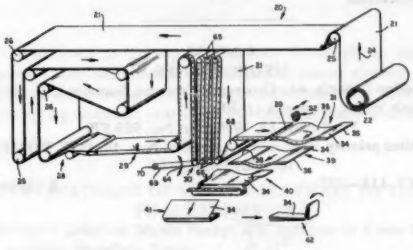
Perry E. Burton, and Charles E. Brocklehurst, both of Fountain Inn, S.C., assignors to Opelika Manufacturing Corporation, Chicago, Ill.

Filed Nov. 1, 1978, Ser. No. 956,792
Int. Cl.³ D05B *97/00*
U.S. Cl. 112—262.3 **16 Claims**

1. A method of cutting and hemming sheet material comprising moving sheet material from a supply along its length toward a cutting station, forming a hem in one edge portion of the sheet material as the sheet material moves toward the cutting station, pulling the leading edge of the sheet material into the cutting station, forming slack in the segment of the sheet material in the cutting station, clamping the leading and trailing edge portions of the segment of the sheet material in

the cutting station against a first pair of parallel conveyor tapes, cutting across the sheet material to form the segment of sheet material in the cutting station in a cut segment, moving the cut segment of sheet material with the conveyor tapes parallel to the cut edges of the sheet material out of the cutting station toward a hemming station, and hemming the cut edges of the cut segment of sheet material at the hemming station after the cut segment has been moved out of the cutting station.

8. In a method of cutting and hemming sheet material, the steps of moving sheet material along its length from a supply into a cutting station, clamping the leading and trailing portions of the segment of sheet material in the cutting station against a first pair of parallel conveyor tapes, cutting the segment of sheet material in the cutting station away from the supply, moving the cut segment of sheet material parallel to its cut edges with the parallel conveyor tapes out of the cutting station onto a second pair of parallel conveyor tapes positioned



outside the first parallel conveyor tapes, clamping the cut segment of sheet material against the second pair of conveyor tapes and releasing the clamping of the cut segment of sheet material against the first pair of conveyor tapes, and moving the cut segment of sheet material with the second pair of conveyor tapes to hemming means.

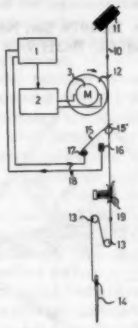
15. A method of cutting and hemming sheet material comprising moving sheet material from a supply along its length to a cutting station, forming slack width-wise across the length of the sheet material in the cutting station, cutting across the sheet material in the cutting station to form leading and trailing cut edges on pieces of cut sheet material, moving the cut piece of sheet material with slack formed in the cut piece of sheet material away from the cutting station along a path parallel to its cut edges, and hemming at least one of the cut edges of the cut piece of sheet material as the cut piece of sheet material is moved away from the cutting station.

4,269,131
THREAD CONTROL DEVICE FOR STITCHING MACHINES

Viktor Principe, Romanshorn, Switzerland, assignor to Arthur Schmid AG, Romanshorn, Switzerland

Filed Jul. 25, 1979, Ser. No. 60,786
Int. Cl.³ D05B *47/04, 69/36*
U.S. Cl. 112—273 **5 Claims**

1. In a thread control device for stitching machines of the type having a program control means (**1**), a thread-break monitoring device (**5**) having resilient current-conducting contact arms (**15**) each with a terminal eye (**15'**) through which a needle thread (**10**) is led from thread spool **11** and a contact bar (**16**), and a thread disc brake (**19**) each required for maintaining thread tension of each thread, the improvement comprising: said program control means (**1**) is adapted to move a feed roller (**12**) by means of step motor (**3**) in accordance with the number of needle threads (**10**) in operation whereby needle threads (**10**)

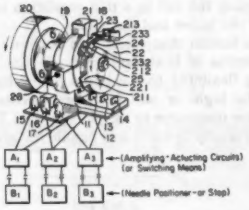


are guided around feed roller (**12**), said needle threads effecting a part of the rotational movement of the feed roller (**12**).

4,269,132
POSITION INDICATING UNIT FOR SEWING MACHINES

Yung-San Hsu, No. 132, Ho Ping Rd., Hsi Men Li, Tao Yuan City, Taiwan

Filed Jan. 13, 1978, Ser. No. 877,300
Int. Cl.³ D05B *69/22*
U.S. Cl. 112—275 **3 Claims**

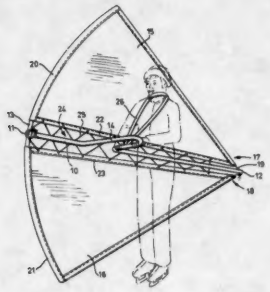


1. A position indicating unit for a sewing machine for indicating predetermined positions of the machine, including a positioning shaft which is connected to the positioner of the sewing machine; a magnet; magnetic pole plates that are disposed at both poles of said magnet; means responsive to said magnet and magnetic pole plates including more than one Hall effect IC; control means operative together with said responsive means to stop the machine at a predetermined down position, said control means also being operative together with said responsive means to stop the machine at a predetermined up position; means including more than one visual signaling device responsive to a juxtaposition of said magnet and said magnetic pole plates; more than one amplifying actuating circuit; and lugs on said magnetic pole plates, wherein the rotation of said magnet and said magnetic pole plates that are fixed onto the positioning shaft which actuates said rotation, makes the magnetic flux in between said pole plates and said lugs rotate through Hall effect ICs, thereby generating a voltage which goes further through amplifying actuating circuits making the visual signal device emit light to indicate the actual operation of said positioner.

4,269,133
HAND-HELD SAIL

Richard L. E. Brown, 382 Mowat Ave., Kingston, Ontario, Canada

Filed Mar. 16, 1979, Ser. No. 21,024
Int. Cl.³ B63H *9/04*
U.S. Cl. 114—103 **9 Claims**

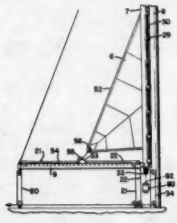


1. A hand-held sail assembly comprising:
a generally sector-shaped sail adapted to define an airfoil configuration,
a frame structure of generally T-shaped configuration for supporting the sail,
the frame structure consisting of a longitudinally extending boom having front and rear ends, and a transverse resiliently flexible mast engageable at its midpoint with the front end of the boom to define therewith said T-shaped configuration,
the sail having an apex portion engageable with the rear end of the boom and a transverse leading edge providing attachment means by which it is attachable to the mast for supporting the sail in a taut condition between said rear end of the boom and the mast,
the boom further comprising end portions joined by a resilient portion of U-shaped configuration, said portion imparting flexibility to the boom in the longitudinal direction, the bight of said U-shaped portion extending in a direction transverse to the plane of said T-shaped configuration thereby to serve as a handle for gripping the assembly.

4,269,134
SAILBOAT WITH UNIVERSAL ROLL FURLING SAIL HOUSING

Earl P. Shapland, 2024 Whitfield Park Dr., Sarasota, Fla. 33580

Filed Aug. 31, 1978, Ser. No. 938,693
Int. Cl.³ B63H *9/10*
U.S. Cl. 114—107 **37 Claims**



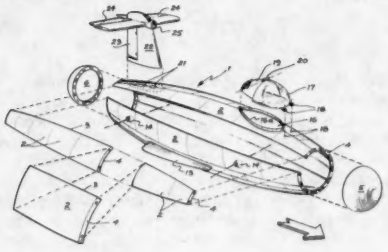
1. A sail furling apparatus comprising: an elongate hollow sail housing having a leading edge with hinge means disposed on the leading edge providing a housing pivot axis substantially paralleling said leading edge and a slot opening along the housing trailing edge providing entrance means for a sail to be furled within and unfurled from the housing; and means mounted in the housing for rotatably securing a sail luff wire between the ends of the housing including means at one end of said housing for rotating said luff wire to furl a sail around said luff wire and within said housing.

35. A sailboat boom and boom car sub-combination for use in combination with furling sails comprising: an elongate member with fore and aft ends and a track provided along its upper surface between the two ends; said front end comprising a boom attachment goose neck with a forward pivot fitting; outhaul and downhaul sheaves rotatably mounted in said goose neck; a turning sleeve mounted on the boom at the aft end of the track; a sheet sheave mounted on the boom under its aft end; a boom car retained in said track to ride fore and aft along said boom and including a single boom car sheave rotatable on a lateral axis transverse to the path of travel of said car; and means on the front end of said boom car to secure the end of the downhaul.

4,269,135
HYDROPLANES

Michelino Labonia, 44a Grosvenor Crescent, Summer Hill, New South Wales, Australia (2130)

Filed Nov. 13, 1978, Ser. No. 959,570
Claims priority, application Australia, Nov. 14, 1977, PD2411
Int. Cl.³ B63B *1/16*
U.S. Cl. 114—272 **8 Claims**



1. A hydroplane boat hull adapted to support power means for driving the boat propellors, air intake and exhaust lines for the power means, fixed stabilizers, movable stabilizers, a tail control assembly, a cockpit and controls in the cockpit; characterised in that the hull is of cylindrical-ellipsoidal form assembled from fitted sections each having internal flanges integrally formed around the edges thereof with abutting flanges of said sections secured together by external welding to form the hull, whereby said abutting flanges form internal ribs for the hull; the hull includes a keel including an engine supporting base having a step formed externally thereon and a pair of propellor housings joined to the base and extending longitudinally thereof, the step providing a planing surface for the hull and each said propellor housing including an opening located adjacent the step whereby as the hull rises to a planing position on the step the propellors constantly engage the water.

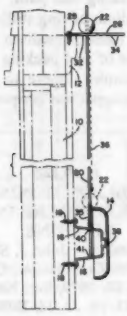
4,269,136
BURGLAR ALARM

Michael D. Hill, P.O. Box 701, Columbia, Tenn. 38401

Continuation-in-part of Ser. No. 2,847, Jan. 12, 1979, Pat. No. 4,203,383. This application Sep. 17, 1979, Ser. No. 76,160
The portion of the term of this patent subsequent to May 20, 1997, has been disclaimed.
Int. Cl.³ G08B *13/08*
U.S. Cl. 116—95 **6 Claims**

1. An assembly of components in a kit, said assembly being adapted from assembly together and affixing to a door and

door frame as a burglar alarm, said assembly comprising (1) a mechanical bell adapted to be fastened to the inside of a door, (2) a bracket having a slot therein, said bracket being adapted



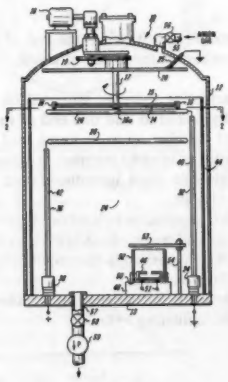
to be fastened to the top of said door frame, (3) an object having a hole therethrough and adapted to rest on said bracket, (4) a rod adapted to project through said slot and said hole and (5) a spring adapted to surround said rod near one end thereof.

4,269,137

PRETREATMENT OF SUBSTRATES PRIOR TO THIN FILM DEPOSITION

Richard I. Johnson, Menlo Park, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 19, 1979, Ser. No. 22,018
Int. Cl.³ C23C *13/00, 17/00*
U.S. Cl. 118—50.1 **4 Claims**



1. Apparatus for the pretreatment of a surface of a support medium prior to deposition of a thin film on said surface comprising

a chamber,

means in said chamber to rotatably support the medium including drive means to rotate the medium at a desired rotational speed,

a first electrode supported in said chamber closely spaced to said medium surface, said first electrode having a planar extent that is in a plane substantially parallel to the plane of the medium as supported by said support means and adapted to cover only a sector of said medium surface, said first electrode being a cathode,

a second electrode supported in said chamber in spaced relation from said first electrode, said second electrode having a planar extent substantially parallel to said first electrode, said second electrode being an anode,

means to evacuate said chamber and introduce and maintain a working gas flow through said chamber as said chamber is continuously evacuated,

means to apply a potential between said electrodes to generate a plasma therebetween,

means to control the pressure in said chamber and the amount of said potential whereby the energy distribution in the gas ions established in said plasma is greater than the energy threshold level necessary to induce ion sputtering of the medium surface, said energy threshold level being a characteristic of the material comprising the medium, whereby ions from said plasma bombard and sputter the medium sector surface through said first electrode as the medium is continuously rotated in said chamber to create a plurality of nucleation sites uniformly over a major portion of the medium surface,

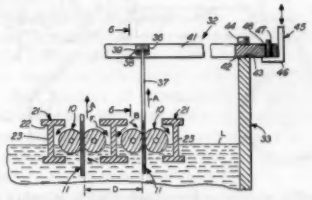
a source of electrons supported in proximity to said plasma to inject electrons into said plasma to intensify ion generation therein, to provide reduction of surface charge of the medium and to stabilize the maintenance of said plasma.

4,269,138

APPARATUS FOR DISTRIBUTING LIQUID OVER A SURFACE

Donald Dinella, Berkley Heights; Albert H. Haller, Clark, and Theodore D. Polakowski, Jr., Bergenfield, all of N.J., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Apr. 23, 1979, Ser. No. 32,616
Int. Cl.³ B05C *11/02*
U.S. Cl. 118—115 **23 Claims**



23. Apparatus for applying a uniform coating of a liquid on the surface of a plurality of substrates, the substrates being suspended in vertical positions spaced a predetermined distance from each other and immersed in a bath of the coating liquid, comprising:

a plurality of support arms horizontally positioned in the bath and capable of being moved in a horizontal direction along the bath, each support arm having a pair of freely rotating rollers mounted thereon with the rollers on each arm being resiliently mounted parallel to each other on opposite sides of the arm, each roller including an outer compressible layer of synthetic chamois or chamois-like material and an inner layer of compliant material in contact with the chamois layer;

means for rotating each of the support arms approximately ninety degrees about a horizontal axis such that the rollers are in one of two positions: (1) a horizontal position with the rollers on each support arm arranged side by side and with less than half of each roller being in contact with the liquid, and (2) a vertical, insert position with the rollers of each support arm arranged one above the other;

means for moving the plurality of support arms horizontally along the bath to either an operation position or a rest position, the operation position being one in which the arms are located in the spaces between the immersed substrates, and the rest position being one in which the arms are retracted from the substrates;

means for removing the substrates from the bath; and

means for activating the removing means after the moving

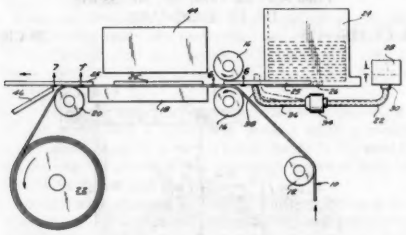
means has moved the arms arranged in the vertical insert positions from the rest position to the operation position with the arms located in the spaces between each of the immersed substrates, and after the rotating means has rotated the arms from the vertical insert positions to the horizontal positions, such that as the substrates are being removed from the bath, the surfaces of the substrates contact and compress the outer layers of the partly immersed resiliently mounted rollers, the removing movement of the substrates causing a synchronous rotation of the contacted rollers whereby the compressed outer layers of the contacted rollers apply a uniform coating of the liquid along the contacted surfaces of the substrates during the synchronous movement of the rollers and substrates.

4,269,139

TRANSFER APPARATUS

Stanford L. Adler, Monsey, N.Y., and Abraham Gordon, Teaneck, N.J., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Division of Ser. No. 806,640, Jun. 15, 1977, Pat. No. 4,120,262, which is a continuation of Ser. No. 642,421, Dec. 19, 1975, abandoned. This application Sep. 19, 1978, Ser. No. 944,201
The portion of the term of this patent subsequent to Oct. 17, 1995, has been disclaimed.
Int. Cl.³ B05C *1/02*
U.S. Cl. 118—642 **6 Claims**



1. Transfer apparatus for transferring a plurality of discrete biological cellular samples from a substrate to a backing element, comprising:

(a) substrate element having a first surface,

(b) a plurality of discrete biological cellular samples,

(c) said biological cellular samples being positioned on said first surface of said substrate element in spaced relationship,

(d) means adapted and constructed to move said substrate element along a predetermined path,

(e) a plurality of backing elements each having a first surface,

(f) supply means for said backing elements,

(g) means adapted and constructed to move said backing element in proximity to said path and in opposing surface relationship with said first surface of said substrate element,

(h) transfer medium,

(i) said transfer medium being transparent and exhibiting a refractive index substantially that of said biological cellular samples,

(j) means adapted and constructed when said transfer apparatus is operated to introduce along said path said transfer medium between the first surface of said backing element and the first surface of said substrate element in sufficient quantity to essentially encapsulate said biological cellular samples,

(k) means adapted and constructed when said transfer apparatus is operated to sandwich said transfer medium between said first surface of said substrate element and said first surface of said backing element along said path whereby said biological cellular samples are encapsulated within said transfer medium,

(l) means adapted and constructed when said transfer apparatus is operated to part said backing element from said substrate element along said path,

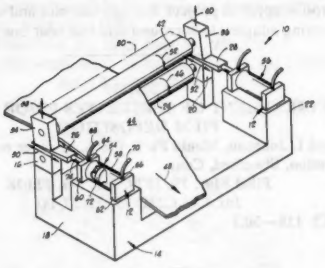
(m) said transfer medium having sufficient adhesive properties whereby said transfer medium is selectively adhered to said first surface of said backing element and said biological cellular samples adhere to said transfer medium when said transfer apparatus is operated.

4,269,140

APPARATUS FOR POSITIONING A COATING THICKNESS CONTROL ROLLER IN A WEB COATING MACHINE

James W. Burns, Edmond, and John J. Shelton, Tuttle, both of Okla., assignors to Fife Corporation, Oklahoma City, Okla.

Filed Jul. 25, 1979, Ser. No. 60,652
Int. Cl.³ B30B *15/14, 15/16;* B05C *11/02, 1/00*
U.S. Cl. 118—665 **5 Claims**



1. An apparatus for positioning one end of a coating thickness control member on the frame of a web coating machine, comprising:

a hydraulic actuating cylinder mounted on said frame and mechanically linked to said one end of the coating thickness control member so as to move said one end of the coating thickness control member in proportion to a volume of hydraulic fluid introduced into said hydraulic actuating cylinder;

pump means for generating at least one hydraulic fluid pulse train, each of said trains characterized as having the form of a series of volumetrically metered pulses of pressurized hydraulic fluid; and

valve means actuable for transmitting selected pulse trains to the hydraulic actuating cylinder.

4,269,141

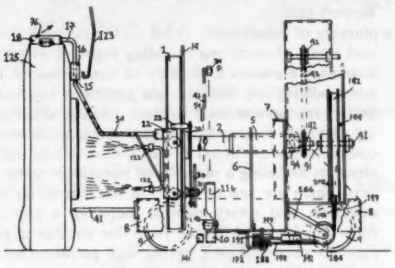
APPARATUS FOR CLEANING THE WHEEL ARCHES OF VEHICLES

John E. Kennett, 11a Vinery Rd., Bury St. Edmunds IP33 2JT, England

Filed Nov. 7, 1978, Ser. No. 958,338
Int. Cl.³ B05B *3/00*
U.S. Cl. 118—708 **36 Claims**

1. Apparatus for cleaning the wheel arches of vehicles comprising support means, a carrier pivotally mounted on said support means about a substantially horizontal pivotal axis, a spraying unit slidably mounted on the carrier and movable substantially inwards and outwards relative to the pivotal axis of the carrier, means for moving the support means whereby the spraying unit is brought into a position alongside a wheel for spraying with the pivotal axis of the carrier adjacent to and

substantially parallel with the axis of the wheel, means for moving said spraying unit inwards and/or outwards in relation



to said pivotal axis of said carrier and means for pivoting the carrier about the pivotal axis relative to said support means.

4,269,142

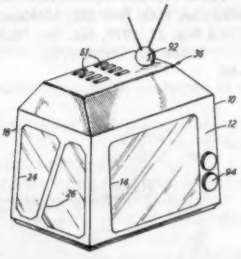
AQUARIUM

Richard C. Hall, 3828 17th Ave. S., Minneapolis, Minn. 55407

Filed Aug. 15, 1979, Ser. No. 66,529

Int. Cl.³ A01K *64/00*

U.S. Cl. 119—5 **4 Claims**



1. An aquarium assembly, comprising, a one piece frame member having a floor section and four vertical wall sections including a front wall section, said wall sections having openings, transparent sheet material for covering said openings being attached to the inside of said wall sections in fluid sealing relation thereto, decorator panels for selected ones of said openings of said vertical wall sections other than said front wall section, said panels being respectively the same sizes as said selected openings and attachable as covers for said selected openings by press fitting from the exteriors of said three vertical wall sections, a hood for said aquarium, said panels having external coverings which harmonize with the external coverings of said frame member and said hood, said panels having aesthetically chosen internal coverings which produce a desired visual effect when viewed through said opening of said front wall section, a bubble bar receptacle having closely spaced side walls of a transparent material, said receptacle being installed in said tank in parallel and closely spaced relation to said front wall section of said tank, a perforated bubble tube in said receptacle extending horizontally along the bottom thereof, said bubble tube having a series of air outlet ports extending in spaced relation at the top and across the length thereof, an air feeding tube in said receptacle connected to said bubble tube and extending vertically in closely spaced relation to one end of said receptacle, an air inlet fitting attached to the top of said tank, tube means between said air feeding tube and said air inlet fitting, and a liquid in said receptacle through which air bubbles from said bubble tube may rise to produce a desired viewing effect.

4,269,143

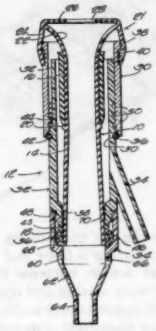
TEAT CUP ASSEMBLY

Thomas W. Erbach, Madison, Wis., assignor to DEC International, Inc., Madison, Wis.

Continuation of Ser. No. 833,748, Sep. 16, 1977, abandoned. This application Dec. 14, 1979, Ser. No. 103,851

Int. Cl.³ A01J *5/06*

U.S. Cl. 119—14.49 **1 Claim**



1. A teat cup assembly comprising:

a central shell member of substantially cylindrical shape made of a transparent plastic material and having a vacuum line connector tube connected thereto;

an upper shell member of substantially cylindrical shape mounted on the top portion of said central shell member in telescopic engagement therewith, said upper shell member having a chamfered portion on the lower edge thereof and a knurled lip on the upper end thereof;

stop means for limiting the telescopic engagement of said upper shell member with respect to said central shell member, said stop means being adjustable so that the overall length of said telescopically engaged central and upper shell members can be adjusted, said adjustable stop means being comprised of a plurality of axially spaced circular grooves in the outer surface of said central shell member and further includes a stop ring member adapted for engagement with one of said grooves and with the lower edge of said upper shell member;

an inflation member of resilient material mounted inside said upper and central shell members, said inflation member having an upper cap portion fitted over the upper end of said upper shell member and a lower end portion stretched over and folded back over the lower end of said central shell member, said cap portion of said inflation member having a teat receiving opening therein, said inflation member further being flared outwardly at the lower end thereof; and

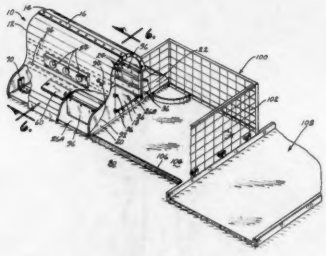
a cap member threadably mounted on the lower end of said central shell member, said cap member made of a transparent plastic material and having a shoulder formed thereon which is positioned to move into engagement with said folded over lower end portion of said inflation member when said cap is threaded onto said central shell member, said cap member further having a connector tip in the lower end thereof for connection to a milk line, a vent hole in the wall thereof and a funnel-shaped portion through which milk flows to said connector tip.

4,269,144

SWINE FARROWING HUT AND METHOD OF FARROWING PIGS AND MAINTAINING A DISEASE-FREE FARROWING HUT

Claude W. Ahrens, R.R. 3, Grinnell, Iowa 50112

Filed Sep. 25, 1978, Ser. No. 945,084
Int. Cl.[3] A01K *1/02*
U.S. Cl. 119—16 **9 Claims**



1. A swine farrowing hut comprising,

a hut structure including a floor and an enclosure of non-porous material which bacteria cannot penetrate and having a center sow section and oppositely disposed side pig sections and opposite end walls,

said floor including oppositely disposed floor portions under each of said oppositely disposed side pig sections and said floor portions containing heating means for heating said side pig sections only whereby pigs will be attracted to the side sections from the center section where the sow cannot lie on the pigs and injure them, and

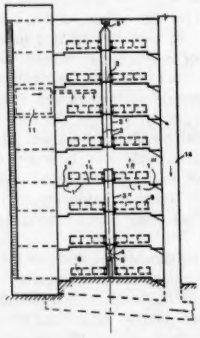
pivot means connecting said floor to one of said end walls for pivoting said hut structure from a lowered position extending over said floor to a raised open ended position off said floor fully exposing said floor and the interior of said hut structure to the sun and atmosphere with said one end wall of said hut structure engaging the ground adjacent said floor.

4,269,145

ANIMAL HOUSE

Yakov Rokhvarg, 269 Ocean Pkwy., Apt. 2E, Brooklyn, N.Y. 11218

Filed Nov. 24, 1978, Ser. No. 963,527
Int. Cl.[3] A01K *1/00*
U.S. Cl. 119—16 **18 Claims**



1. An animal housing comprising

a floor part having an axis and including stationary radially inner and radially outer annular elements which are radially spaced from one another so as to form a gap therebetween, and a rotary radially intermediate annular element located between said stationary elements in said gap, said annular elements being concentric relative to one another and said stationary annular elements being arranged to support animals;

a plurality of substantially radial partitions connected with said rotary element and bounding together with the said stationary elements a plurality of compartments for accommodating the animals, said partitions together with said rotary element being rotatable relative to said stationary elements so that the animals accommodated in said compartments are urged to move, each of said stationary elements including a plurality of immovable stator members which are spaced from one another in an upright direction, said rotary element including a plurality of rotor members also spaced from one another in the upright direction and each having such partitions bounding such plurality of compartments, said rotor members together with said stator members forming a plurality of such floors, said rotor members being connected with each other and jointly movable relative to said stator members so that each of said rotor members is movable relative to respective stator members, and said rotor members together form a multi-storey spatial structure; and

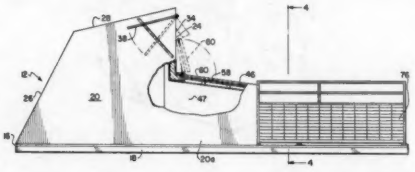
means for driving said rotary element in rotation together with said partitions about said axis.

4,269,146

HOG FARROWING HOUSE

Charles L. Lindenman, P.O. Box 233, Morland, Kans. 67650

Filed Sep. 27, 1979, Ser. No. 79,361
Int. Cl.[3] A01K *1/02*
U.S. Cl. 119—16 **8 Claims**



1. A hog farrowing house and pen, comprising:

housing structure including spaced, upright sidewalls, an upright front wall connected to said sidewalls, an obliquely oriented rear wall spaced from said front wall and connected to said sidewalls to cooperatively present a restricted safety zone within the structure for protection of young pigs;

upright barrier means within said housing structure for defining therewithin a main hog area and an enclosed pig creep area and preventing mature hogs from entering the creep area;

a pen assembly adjacent the front wall of said housing structure and comprising

upright hog-confining means forming, with the front of said housing structure, a hog pen outside of said housing structure;

upright young pig-confining means adjacent a portion of said front wall and defining with said front wall portion an enclosed pig pen for young pigs outside of said housing structure which is separate from said hog pen, said pig pen being a sub-pen of said hog pen and including upright partition means extending forwardly from said front wall;

separate hog and pig access doorways through said front wall, on opposite sides of said partition means, and respectively communicating the main hog area of said housing structure with said hog pen, and said creep area with said young pig pen;

a cover wall extending forwardly from said front wall in at least partial covering relationship to said pig pen;

solar energy conveying means located within a portion of said cover wall above said pig pen for allowing young pigs to warm themselves within said pig pen.

4,269,147

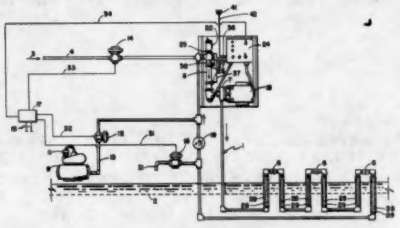
ANIMAL WATERING SYSTEM

Donald W. Vorbeck, Napa, Calif., assignor to Atco Manufacturing Co., Inc., Napa, Calif.

Filed Mar. 3, 1980, Ser. No. 126,176

Int. Cl.[3] A01K *7/00*; E03B *7/10*

U.S. Cl. 119—73 **5 Claims**



1. An animal watering system comprising:

a. a loop water distribution line;

b. a water supply connected to said distribution line by a supply line;

c. demand animal-actuated valves connected to said distribution line;

d. a recirculation water pump connected to said distribution line;

e. an electrical heater element mounted in said distribution line;

f. a compressed air storage tank;

g. air compressor means connected to said air storage tank for filling said tank with compressed air;

h. a normally closed power actuated solenoid air valve mounted in said compressed air line;

i. a normally open power actuated solenoid water supply valve mounted in said water supply line;

j. a normally closed power actuated solenoid water discharge valve mounted in said water distribution line;

k. a check valve in said distribution line downstream of said power actuated solenoid water discharge valve; and

l. system control means operatively connected to said valves for closing said water supply valve, opening said water drain valve, and opening said air valve in the event of an electrical power failure for purging all water from said animal watering system.

4,269,148

ANIMAL EXCREMENT AND URINE RECEPTACLE APPARATUS

Gloria Holley-Donawa, 284 Sunrise Ter., Springfield, Mass. 01119

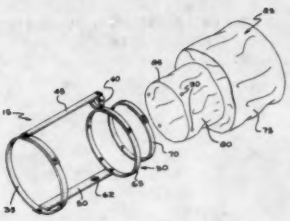
Filed Sep. 7, 1979, Ser. No. 73,306

Int. Cl.[3] A01K *23/00*

U.S. Cl. 119—95 **8 Claims**

1. Animal excrement receptacle apparatus comprising:

a flexible harness adapted to fit over the posterior of an animal, said harness comprising a plurality of straps interconnected in generally coplanar unfolded configuration with a first of said straps being adapted to girth the tail of said animal and a second of said straps being adapted to extend longitudinally of said animal, and means for removably mounting an excrement receiving bag on said harness, said bag mounting means comprising a pair of concentric frames, a mouth portion of said bag being adapted to be removably received within the inner one of said frames, folded over said frame and fixed between said inner and outer frames, said outer frame, with said inner



frame and bag, being removably secured to said harness between said first and second straps.

4,269,149

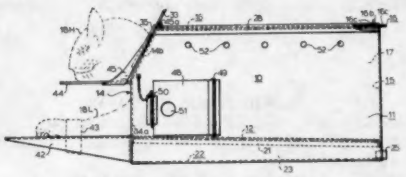
PASSIVE RESTRAINER FOR SMALL ANIMALS

Roy W. Thomas, 1045 "C" Ave., National City, Calif. 92050

Filed May 15, 1979, Ser. No. 39,210

Int. Cl.[3] A61D *3/00*

U.S. Cl. 119—103 **2 Claims**



1. In a passive restraining apparatus for use in the administration to small animals of anaesthetics, intravenous fluids and the like, comprising

(a) a housing (**10**) for loosely confining therein the main portion of an animal's body including two rear legs in an unstressed condition;

(b) said housing being provided with a front wall (**14**) having an upper opening (**47**) therein for holding the animal's neck in substantially immobilized position with its head projecting forwardly from said wall;

(c) said front wall being provided with at least one lower opening (**29**) for receiving the forearms of the animal's forelegs (**18L**, **18L**) in forwardly projecting positions;

(d) means for immobilizing the outer end portions of said forearms, and

(e) means (**44**) for vertically supporting the animal's head (**18H**) in spaced relation to and above its immobilized forearms and for relatively free sidewise movement about its neck to thereby prevent access by the head to the forearms and provide a safety zone in which attendants may examine and treat the latter,

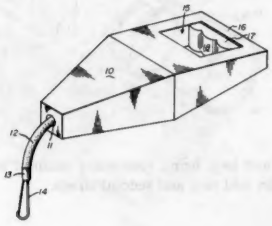
(f) said last-named means positioned below said upper opening and including a substantially horizontal platform constituting the sole support and restraint of the animal's head while permitting uninterrupted sidewise vision by the animal during the sidewise movement of its head.

4,269,150

DOG LEASH

Michael D. McCarthy, 1065 Huntingdon Dr., San Jose, Calif. 95129

Filed Oct. 1, 1979, Ser. No. 80,242
Int. Cl.[3] A01K 27/00
U.S. Cl. 119—109 6 Claims



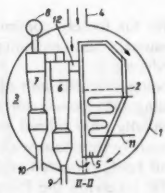
1. A retractable dog leash comprising: a hollow casing having an opening therethrough at one end thereof, a portion of said casing adjacent said opening forming a handgrip area, a leash cable for an animal such as a dog, a shaft supported spool in said casing, a hole in said casing remote from said handgrip area through which said leash cable is threaded, said leash cable extending from said hole within said casing around said opening through said handgrip area and onto said shaft supported spool, spring means operatively connected to said spool to yieldingly retract said cable once said cable has been payed out, and manually activated braking means on said casing movable into braking engagement with the portion of said leash cable within said handgrip area in a direction opposite to the pulling direction of said animal on said cable.

4,269,151

COMBUSTION CHAMBER

Pehr Böjesgard, Finspong; Anders Kullendorff, Aby, and Jan Wikner, Finspong, all of Sweden, assignors to Stal-Laval Turbin AB, Sweden

Filed Feb. 8, 1979, Ser. No. 10,355
Claims priority, application Sweden, Feb. 13, 1978, 7801617
Int. Cl.[3] B01J 8/18
U.S. Cl. 122—4 D 10 Claims



1. A pressurized combustion chamber assembly capable of providing heated combustion gases for use in gas turbine assemblies and the like, and comprising:

an elongated, hollow outer casing assembly including an inlet aperture extending through a wall thereof to allow a coampressed gas, such as air, to enter said casing;

an elongated, fluidized bed combustion chamber positioned within said outer casing, said fluidized bed combustion chamber having a wall portion confronting an inner surface of said outer casing and defining a fluid passageway sufficient to allow said compressed gas to enter said inlet aperture and flow between said fluidized bed combustion chamber and said outer casing, thereby receiving and transferring excessive heat away from said wall portion of said fluidized bed combustion chamber;

inlet means extending through further wall portions of said fluidized bed combustion chamber for allowing said compressed gas to enter said fluidized bed combustion chamber;

outlet means extending through wall portions of said fluidized bed for allowing hot combustion gases to exit from said fluidized bed combustion chamber; and

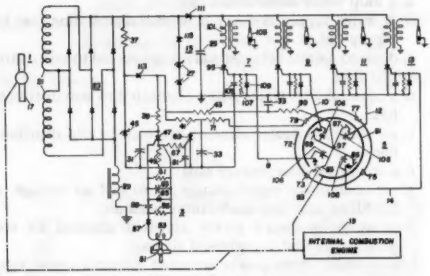
cleaning means positioned within said outer casing separate from said fluidized bed combustion chamber and in fluid connection with said outlet means for receiving hot combustion gases from said combustion chamber and separating debris from said hot combustion gases while flowing therethrough.

4,269,152

BREAKERLESS PULSE DISTRIBUTION SYSTEM AND OPTO-ELECTRICAL DISTRIBUTOR THEREFOR

Howard E. Van Siclen, Jr., Sidney, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed May 22, 1978, Ser. No. 908,479
Int. Cl.[3] F02P 1/00, 3/06
U.S. Cl. 123—146.5 A 18 Claims



1. A breakerless distributor for sequentially distributing electrical pulses to a plurality of electrically energizable output lines at intervals determined by pulses on a single input line, said distributor comprising:

a plurality of electrically activated radiant energy sources, equal in number to the number of output lines, all connected to the input line to emit radiant energy simultaneously for the duration of each pulse on said input line;

a photosensitive switch associated with each radiant energy source and arranged in confronting spaced relation thereto, each of said photosensitive switches being connected in an output line to complete the circuit thereof when turned on by the associated radiant energy source;

a shutter member arranged for movement between said radiant energy sources and said photosensitive switches for blocking the reception of radiant energy from the associated radiant energy source by all but one of the photosensitive switches at a time; and

means for moving the shutter member relative to the radiant energy sources and the photosensitive switches in synchronism with the pulses on the input line to sequentially and repetitively unblock the reception of radiant energy by each photosensitive switch in order for each successive pulse on the input line for an interval which exceeds the duration of a timing pulse whereby pulses are sequentially generated on successive output lines and adjustments in the timing pulses can be accommodated.

4,269,153
INTERNAL COMBUSTION ENGINE WITH FUEL INJECTOR

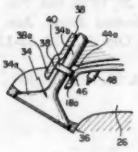
Kazuya Kunii; Saburo Tsutsumi, both of Yokohama, and Shizuo Ishizawa, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 4, 1979, Ser. No. 27,141

Claims priority, application Japan, Apr. 15, 1978, 53-50416[U]

Int. Cl.³ F02B *31/00*

U.S. Cl. 123—308 **9 Claims**



1. An internal combustion engine having a combustion chamber and an intake valve seatable on a valve seat, comprising:

means for defining an intake passageway through which the combustion chamber is communicable with atmospheric air, a throttle valve being pivotally disposed in said intake passageway;

a fuel injector including a fuel injection nozzle which is projected into the intake passageway downstream of the throttle valve and immediately upstream of the combustion chamber;

means defining a straight elongate opening located adjacent the nozzle of said fuel injector, the axis of said straight elongate opening intersecting the axis of the nozzle of said fuel injector at a predetermined angle;

means defining an additional air passage through which said elongate opening is communicable with said intake passageway upstream of said throttle valve;

means defining an air chamber which is located around the valve stem of said intake valve and communicates with said additional air passage, said straight elongate opening being communicable with said air chamber, said air chamber defining means including a cup-shaped wall section which is formed with an opening through which the interior of said cup-shaped wall section communicates with said additional air passage, said straight elongate opening being formed through said cup-shaped wall section, and an annular valve member secured on the valve stem of said intake valve, the annular periphery of said valve member slidably contacting the inner cylindrical surface of said cup-shaped wall section, said air chamber being defined by the inner surface of said cup-shaped wall section and the annular surface of said valve member.

4,269,154
IGNITION TIMING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Toshiharu Iwata, Aichi; Tadashi Hattori; Siniti Mukainakano, both of Okazaki; Kenji Goto, and Daisaku Sawada, both of Susono, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed May 23, 1979, Ser. No. 41,933

Claims priority, application Japan, May 24, 1978, 53-62030; Jun. 13, 1978, 53-71249

Int. Cl.³ F02P *5/14*

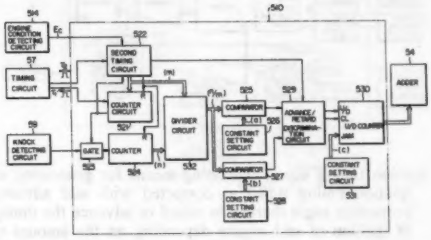
U.S. Cl. 123—425 **3 Claims**

1. In an ignition timing control system for an internal combustion engine including means for detecting a first set of engine operating parameters and for generating an engine condition signal indicative thereof; means, responsive to said engine condition signal, for computing a base advance angle and for generating a digital signal representative thereof; first counter means for counting the digital signal from said base advance computing means and for generating an output signal when said first counter means reaches a predetermined count value; and igniter means, responsive to the output signal of said first counter means, for generating an ignition signal; the improvement comprising:

means for detecting the occurrence of an engine knock and generating a knock detection signal indicative thereof;

second counter means for counting the number of output signals from said first said counter means and for generating an output signal when a number m of said output signals from said first counter are counted;

timing means, connected to said second counter means, for



determining the number m to which said counter means counts;

third counter means, connected to said knock detecting means and to said counter means, for counting the number n of said knock detection signals during a period that said second counter means counts the number m;

dividing means, connected to said timing means and to said third counter means, for computing a knocking ratio expressed by n/m;

comparator means, connected to said dividing means, for comparing the knocking ratio n/m with an upper and a lower level; and

means, connected to said comparator means and to said first counter means, for altering the count value of said first counter means in accordance with a comparison result from said comparator means.

4,269,155
IGNITION TIMING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Toshiharu Iwata, Aichi; Tadashi Hattori; Siniti Mukainakano, both of Okazaki; Kenji Goto, and Daisaku Sawada, both of Susono, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Aug. 20, 1979, Ser. No. 68,477

Claims priority, application Japan, Sep. 1, 1978, 53-107746

Int. Cl.³ F02P *5/14*

U.S. Cl. 123—425 **3 Claims**

1. An ignition timing control system for an internal combustion engine comprising:

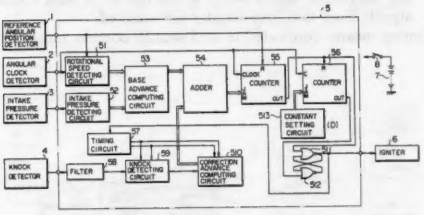
a knock detector for sensing vibrations of said engine;

a knock detecting circuit for comparing an output signal of said knock detector with a predetermined threshold level and for generating a knock detection signal indicating when said output signal is above said predetermined threshold level;

correction advance computing means, responsive to said knock detection signal, for computing an advance correction angle and generating an ignition advance correcting signal related thereto, said advance computing means comprising:

counter means for counting said knock detection signal to determine the number n of knocks occurring within a predetermined number of engine ignitions; and

comparator and computing means for (i) comparing the counted number n with upper and lower limits (a) and (b), respectively; (ii) producing said ignition advance correcting signal effective to retard ignition timing when $n \geqq a$; (iii) producing said ignition advance correcting signal effective to not alter ignition timing when $b < n < a$; and (iv) producing said ignition advance correcting signal effective to advance ignition timing when $n \leqq b$;



ignition timing signal generating means for generating an ignition timing signal as corrected with said advance correction angle thereby to retard or advance the timing of ignition of said engine depending on the amount of knock; and

means for supplying electric power to said correction advance computing means even after a key switch associated with said engine is turned off, thereby to maintain said correction advance computing means being to maintain said correction advance computing means being energized to memorize said advance correction angle corresponding to a knock condition just before the key switch is turned off.

4,269,156

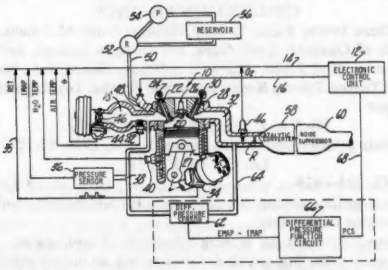
AIR/FUEL RATIO MANAGEMENT SYSTEM WITH CALIBRATION CORRECTION FOR MANIFOLD PRESSURE DIFFERENTIALS

Glen J. Drellishak, Rochester, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed May 1, 1979, Ser. No. 35,036

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—478 **13 Claims**



1. An air/fuel ratio management system for an internal combustion engine having an intake manifold and an exhaust manifold, said system comprising:

electronic control means for regulating the air/fuel ratio of the engine by controlling the amount of fuel supplied to the engine in response to at least one engine operating parameter;

means for sensing the difference in pressure between the intake manifold of the engine and the exhaust manifold of the engine and for generating a differential pressure signal indicative of that pressure difference; and

means responsive to said intake manifold pressure and said differential pressure signal for generating a pressure correctional signal for said electronic control means for regulating the air/fuel ratio of the engine.

4,269,157

FUEL INJECTION SYSTEM

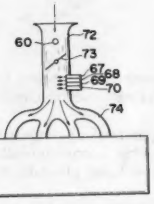
Takeshi Fujishiro, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 20, 1979, Ser. No. 50,164

Claims priority, application Japan, Jun. 27, 1978, 53-77020; Aug. 10, 1978, 53-96721; Oct. 5, 1978, 53-122025; Oct. 20, 1978, 53-128586

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—478 **12 Claims**



1. A fuel injection system for use in an internal combustion engine having an intake passage, comprising:

(a) at least one fuel injection valve for supplying fuel to said engine when said fuel injection valve is open;

(b) an air flow sensor disposed within said intake passage for generating a pulse signal at a frequency proportional to air flow through said intake passage;

(c) frequency comparator means responsive to said pulse signal for generating a first output signal when the frequency of the pulse signal is less than a reference frequency and a second output signal when the frequency of the pulse signal is greater than the reference frequency;

(d) control circuit means operatively coupled to said air flow sensor and said frequency comparator means for passing the pulse signal in response to said first output signal, and for dividing the frequency of said pulse signal at a predetermined division ratio and passing the frequency-divided pulse signal in response to said second output signal;

(e) pulse generator means responsive to said first output signal for generating a pulse signal having pulses of a first pulse width and responsive to said second output signal for generating a basic pulse signal having pulses of a second pulse width equal to the multiplication of the first pulse width by said division ratio; and

(f) drive circuit means operatively coupled to said control circuit means and said pulse generator means for opening said fuel injection valve for a time determined by the pulse width of a pulse from said pulse generator means in response to each pulse signal from said control circuit means.

4,269,158

INTERCOOLER FOR INTERNAL COMBUSTION ENGINE

Jerome L. Berti, Chicago Heights, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

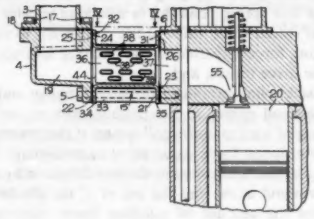
Continuation of Ser. No. 922,668, Jul. 6, 1978, abandoned. This application Jul. 7, 1980, Ser. No. 166,043

Int. Cl.³ F02B *29/04*

U.S. Cl. 123—563 **10 Claims**

1. An internal combustion engine having at least one cylinder comprising, a cylinder head defining a side mounting sur-

face for an intake manifold and an air delivery chamber, an intake manifold defining a plenum chamber for receiving incoming air, an integral intercooler forming a spacer mounted on the side of said cylinder head and providing a cantilever mounting of said intake manifold including, passage walls forming a cross passage between said intake manifold and said cylinder head, peripheral reinforcing structure enclosing said passage walls on said intercooler for rigidly supporting said manifold on said engine head, said peripheral reinforcing structure defining bolt holes extending continuously through said reinforcing structure and aligned with bolt holes in said head and intake manifold for receiving common fastening means, coolant conduits extending the length of said cross passage of



said intercooler for circulating coolant fluid through said conduits, a plurality of cooling fins interleaved along the cooling conduits for cooling air passing through the said cross passage, means defining cooling fluid chambers at the ends of said intercooler for circulating coolant fluid through said intercooler, complementary mounting surfaces including said side mounting surface on said cylinder head and a surface on said intake manifold adapted for selectively mounting said intake manifold directly on said cylinder head to operate the engine as a naturally aspirated engine, said intercooler defining complementary mounting surfaces for selectively mounting said intercooler between said cylinder head and said intake manifold for supporting said intake manifold connected to a supercharger when operating the engine as a supercharged engine.

4,269,159

ENGINE SYSTEM

Robert T. J. Skinner, High Wycome, England, assignor to Lucas Industries Limited, Birmingham, England

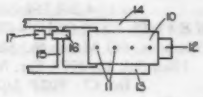
Filed Sep. 12, 1979, Ser. No. 75,193

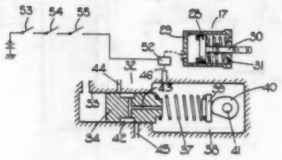
Claims priority, application United Kingdom, Oct. 12, 1978, 40331/78

Int. Cl.³ F02M *25/06*

U.S. Cl. 123—569 **6 Claims**

1. An engine system including a compression ignition engine, a fuel pumping apparatus for supplying fuel in timed relationship to the combustion chambers of the engine, a fuel control member forming part of the apparatus and adjustable to control the amount of fuel supplied by the apparatus at each delivery stroke thereof, an air inlet and an exhaust gas outlet on the engine, valve means operable to permit exhaust gas from the outlet to pass to the inlet, said valve means including a valve member and the system including a valve actuator for moving said valve member between an open and a closed position, the valve actuator comprising a pressure responsive member which is resiliently biassed to a position in which the valve member assumes the closed position, pump means for supplying fluid under pressure, a piston located within a cylinder, conduit means connecting one end of said cylinder to said pump means, resilient means biassing the piston towards said one end of the cylinder, orifice means defined in the piston and cylinder for controlling the fluid pressure at the other end of the cylinder whereby the force developed by the fluid pressure acting on the end of the piston at the one end of the cylinder is balanced by the force due to the resilient means and the fluid pressure acting on the other end of the piston, further conduit means through which the fluid at the other end of the cylinder is applied to the pressure responsive member of the actuator,





and means responsive to the setting of the fuel control member for varying the force exerted by the resilient means.

4,269,160

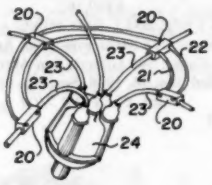
IGNITION DEVICE FOR INTERNAL COMBUSTION ENGINE

Eugene Irvin, Jr., 522 Winchester, Richardson, Tex. 75080

Filed Feb. 8, 1979, Ser. No. 10,330

Int. Cl.³ F02M *27/04*

U.S. Cl. 123—620 **12 Claims**



1. An ignition device for improving the combustion process in the combustion chambers of the cylinders of an internal combustion engine having spark plug wires connected between a distributor and the spark plug of each cylinder of said engine, said device comprising: a plurality of separate electrically conductive plates insulated from each other and supported in an assembly means for connection partially around and in insulated relationship with each of said spark plug wires defining a plurality of condenser plates for each of said spark plug wires of an engine for inducing an electrical potential in each of said plates responsive to electrical current flow in one of said spark plug wires through one set of said plates; and a plurality of separate electrical conductors interconnecting corresponding ones of said condenser plates in each of said sets of said plates at all of said spark plug wires, each of said separate conductors and said plates connected with said conductors being insulated from each of the other of said conductors and plates connected with said conductors, whereby current flow through any one of said spark plug wires energizing said wire

induces an electrical potential in said plates at said wire and said induced electrical potential is communicated with the remainder of said plates connected with each of said conductors at the non-energized ones of said spark plug wires.

4,269,161

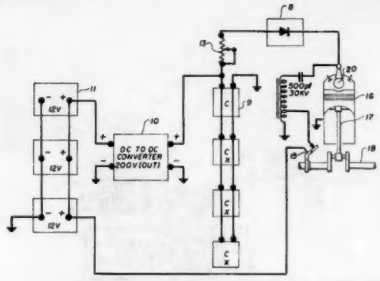
VARIABLE FUEL EXPLOSION CHAMBER ENGINE

William F. Simmons, 541 March St., Shillington, Pa. 19607

Filed Jul. 18, 1979, Ser. No. 58,680

Int. Cl.[3] F02P *1/00*

U.S. Cl. 123—620 **10 Claims**



1. A high energy electrical ignition and discharge system for an internal combustion engine to enable explosion of powdered and liquid fuels, comprising an explosion cylinder having a single ignition and discharge electrode inside the top center of said cylinder, an ignition coil connected between ground and said electrode, a bank of high voltage capacitors energized by a source of high D.C. voltage, high voltage high current diode stack which are connected between said electrode and said high voltage capacitors isolated from said ignition coil, whereby high current discharge by said capacitors is effected by said electrode in the fuel mixture of said combustion chamber.

4,269,162

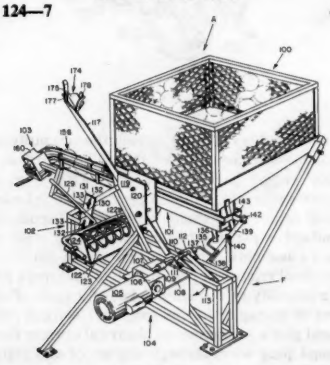
SPRING TYPE BALL PITCHING APPARATUS

Jeffrey L. Abraham, 218 Maplewood, San Antonio, Tex. 78216, and Gary D. Banse, 546 Gilbert, San Antonio, Tex. 78213

Filed Jan. 16, 1978, Ser. No. 869,704

Int. Cl.[3] F41B *7/00*

U.S. Cl. 124—7 **4 Claims**



1. A spring powered pitching arm for a ball pitching means for a ball pitching machine, comprising:

an oscillating pitching arm rotatably mounted upon a ball pitching machine for oscillating in a vertical arc;

a power drive means operatively connected with the pitching arm for pivoting the pitching arm one direction in the arc;

a selectively torsionable coil spring operatively connected with the pitching arm to impart a pitching force to the pitching arm upon torsioning of the coil spring by the movement in the one direction by the pitching arm and release of the pitching arm by the power drive means to allow the pitching arm to be moved in the opposite direction by the coil spring to provide the pitching motion;

a spring torsion adjusting means for setting the torsion of the coil spring to a prestressed first predetermined force value prior to additional torsioning of the coil spring by the movement in the said one direction by the pitching arm, said pitching arm applying the additional torsioning force to the coil spring resulting in a second greater predetermined stored force value in the coil spring to control the pitching force imparted to the pitching arm upon release by the drive means; and

an adjustable link extending directly between and connecting the coil spring to the pitching arm to maintain the amount of torsion in the coil spring at the prestressed first predetermined force value prior to torsioning of the coil spring by the movement in the one direction by the pitching arm and at the end the arc of of the pitching arm to control the amount of pitching force imparted to the pitching arm.

4,269,163

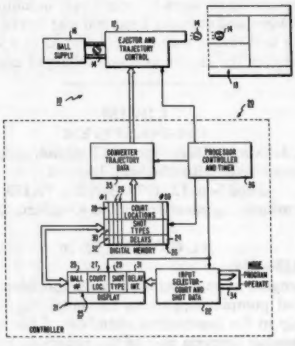
SYSTEM AND APPARATUS FOR PROGRAM CONTROLLED DELIVERY OF GAME BALLS

Donald Feith, Elkins Park, Pa., assignor to United States Machine Works, Inc., Lansdale, Pa.

Filed Dec. 30, 1977, Ser. No. 865,932

Int. Cl.[3] A01B *65/12, 69/38;* F41F *1/04*

U.S. Cl. 124—77 **19 Claims**



1. Program controlled game ball delivery apparatus comprising:

means for successively ejecting a plurality of game balls, including means for setting the trajectories of said balls; and

a controller including:

an input device for entering court and ball data signals for each of a plurality of balls, said input device including means displaying a tennis court diagram having a multiplicity of court locations distributed over said diagram corresponding to actual positions on a tennis court where an ejected ball would first hit for each of the different ball trajectories, and means for selecting one of said court locations for each ball and for developing electrical identifying data signals for the selected court location, said selecting and signal developing means

including a multiplicity of separate manually operated switch means at said respective court locations,

means for converting said court location and ball data signals for each ball to data signals for the corresponding ball trajectory,

memory means for digitally storing data signals respectively associated with a sequence of balls,

and means for operating said trajectory setting means in accordance with the trajectory data signals for each said ball so as to set a sequence of individual ball trajectories in accordance with said sequence of stored data signals,

whereby the operator merely selects the ball type and a court location for each delivered ball to hit on an associated tennis court and the apparatus establishes the corresponding trajectory to deliver the ejected ball thereto.

4,269,164

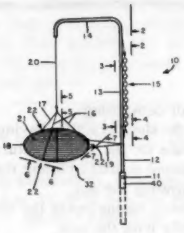
SWING-A-WAY CAMP GRILL

Donald R. Van Grinsven, 405 Buchanan Rd., and Michael H. Winius, 226 Kamps, both of Combined Locks, Wis. 54113

Filed Mar. 5, 1979, Ser. No. 17,734

Int. Cl.³ A47J *33/00*; F16M *11/00*; F24B *3/00*

U.S. Cl. 126—30 **5 Claims**



1. A ground supported adjustable and knockdown grill device comprising a single support leg element formed of a plurality of tubular members, an upper member being an inverted L-shape and having a flexible element extending through to provide a support for a grill member or cooking utensil, said flexible element having an additional flexible element member as an extension thereof to provide vertical adjustment of said grill or cooking utensil, said grill or cooking utensil being secured to the support leg element for stability thereof, the grill or cooking utensil further being pivotal 360 degrees in a horizontal plane by means of a support leg member.

4,269,165

OVEN HINGE

Walter A. Wrotny, Berlin, N.J., and James D. McIntosh, Philadelphia, Pa., assignors to Mitchell Industries, Inc., Philadelphia, Pa.

Filed Jun. 11, 1979, Ser. No. 47,207

Int. Cl.³ F23M *7/00*; F24C *15/04*

U.S. Cl. 126—191 **14 Claims**

1. In a hinge to be secured to an oven door;

a housing to be fixedly secured to the oven door;

arm means for demountably securing the door to the oven;

main pivot means securing said arm to said housing and providing for pivoting of the door as between closed, broil, and open positions;

a compression spring;

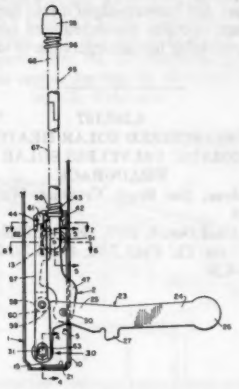
first means connected between one end of said spring and said arm including mechanism to condition the first means to accomodate said pivoting of the door;

second means connected between the opposite end of said spring and said main pivot including mechanism to accomodate said pivoting of the door, the spring being compressed between the first and second means;

means forming a closed position detent and a broil position detent;

roller means connected to said second means for engaging said detents to establish the closed and broil positions;

said first and second means being operative as a function of the pivotal position of the door:



(a) to place said roller against one of said detents and compress the spring and transmit force of the same to cause the roller to tightly engage the detent and establish the closed or broil position;

(b) to compress or de-compress said spring and transfer the force of same to said door in opposition to the force developed by the weight of the door and thereby provide for counter-balancing.

4,269,166

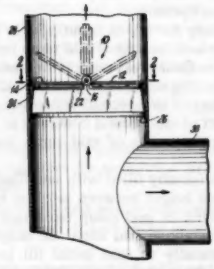
STACK DAMPER VALVE

Arthur C. Worley, Mt. Tabor, and Richard J. Basile, Rockaway, both of N.J., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Filed Dec. 21, 1978, Ser. No. 972,478

Int. Cl.³ F23L *3/00*

U.S. Cl. 126—285 R **1 Claim**



1. A damper valve for use in stack systems comprising a pair of steel semi-circular members having contiguous straight edges and axially aligned hinged pipe sections disposed along said contiguous straight edges which are interconnected by means of a removalbe pin extending through said aligned sections and whose axis is disposed transverse of the axis of said stack, an annular steel seat comprising a truncated circular steel member welded to and extending continuously about the interior of said stack, said semi-circular members having a

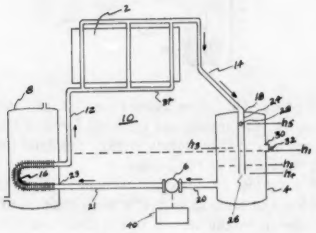
plurality of stiffening ribs facing said seat, said semi-circular members being mounted and arranged for metal-to-metal seating contact with said seat in a closed position of said valve and movable between said closed position and an open position wherein said semi-circular members are disposed downstream of said annular steel seat, said semi-cicrular members interconnected only along said straight edges when said semi-circular members are in either of said open and closed positions, operator means disposed externally of said stack and operably connected for disposing said semi-circular members in said open or closed positions, and counterweight means disposed externally of said stack and operably connected with said semi-cicrcular members for providing fail-safe operation of said semi-circular members.

4,269,167

CLOSED PRESSURIZED SOLAR HEATING SYSTEM WITH AUTOMATIC VALVELESS SOLAR COLLECTOR DRAIN-BACK

John M. Embree, Bee Brook Crossing, Washington Depot, Conn. 06794

Filed Dec. 7, 1979, Ser. No. 89,546
Int. Cl.³ F24J *3/02*; E03B *7/10*
U.S. Cl. 126—420 **12 Claims**



12. In a closed fluid circulating system wherein a fluid is circulated through a supply line from a first container to an elevated second container, said second container having an input port and an output port, and returned to said first container through a return line, said system having a system pump connected in series with said supply line and forcing circulation of said fluid, and a system controller connected to said pump to control the operation of said pump in accordance with detected system parameters, the improvement comprising:

a first container consisting of a sump tank serving as a reservoir for said fluid, said sump tank having a top opening and a bottom opening;

said system pump having an input port in fluid connection with said bottom opening of said sump tank and having an output port in fluid connection with container supply line means connecting said output port of said system pump to said input port of said second container;

said output port of said second container in fluid connection with said top opening of said sump tank through said return line;

said sump tank initially filled with said fluid to an initial fill level at a first height between said top opening and said bottom opening of said sump tank, said system initially filled with air above said initial fill height, said fluid returning essentially to said initial fill level at said first height, upon drain-back of said container; said fluid lowering, when said pump is pumping, to a fluid operating level within said sump tank at a second height below said first height;

said sump tank having an internal pipe conveying the flow from said return line and extending downward from said top opening in said sump tank to a third height within said sump tank, said third height being below said second height fluid operating level, said internal pipe in fluid connection with vacuum break means within said sump tank at a fourth height between said top opening of said sump tank and said first height initial fill level;

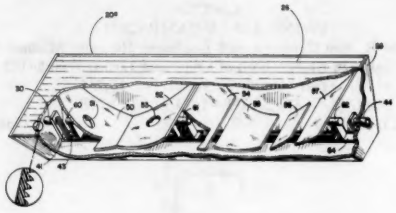
whereby de-energization of said pump by said controller produces a cessation of circulation of said fluid, causing air from within said sump tank to enter said internal pipe through said vacuum break means, breaking the vacuum in said return line and commencing drain-back of said second container.

4,269,168

FOCUSING REFLECTOR SOLAR ENERGY COLLECTOR APPARATUS AND METHOD

Steven A. Johnson, 136 N. 1st West, Preston, Id. 83263

Filed Dec. 18, 1978, Ser. No. 970,761
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—424 **13 Claims**



1. A solar collector comprising:

a shell structure, the shell structure having an open top;

first mounting means for the shell structure for rotating the shell structure about an axis to orient the open top of the shell structure toward the sun;

solar energy absorber means inside the shell structure and mounted coaxially with the axis;

second mounting means for supporting the solar energy absorber means inside the shell structure in a nonrotatable position relative to the sun to thereby accommodate rotational movement of the shell about the solar energy absorber means; and

optical means in the shell structure for directing solar energy toward the solar energy absorber means and focusing the solar energy coaxially on the solar energy absorber means, said optical means comprising a linear Fresnel lens means configurated as a transparent cover for the open top of the shell structure, the linear Fresnel lens means concentrating solar energy into a linear focus, said optical means further comprising parabolic mirror means for focusing said linear focus into said solar energy absorber means.

4,269,169

CARTRIDGE FOR HOT AIR OVEN

Raul Guibert, 8343 W. 4th St., Los Angeles, Calif. 90048

Continuation-in-part of Ser. No. 776,772, Mar. 11, 1977. This application Aug. 16, 1977, Ser. No. 825,037
Int. Cl.³ B65D *21/00*; F25B *13/00*
U.S. Cl. 126—426 **6 Claims**

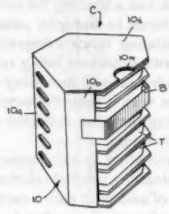
1. A cartridge usable in conjunction with a hot air oven wherein heated air is blown through a hollow cylindrical core formed by an annular array of such cartridges to create a swirling flow pattern therein, said cartridge comprising:

A. a vertical stack of trays containing pre-cooked meals, said trays having a hexagonal geometry formed by three back sides and three front sides, said trays having spacers to produce circulation spaces therebetween in the stack; and

B. a carton nesting the stack of trays and having a rear wall and first and second inclined side walls corresponding to the three back sides of said hexagonal trays, whereby said carton is open on the front three sides of said trays, the

rear walls of the cartons in the array of cartridges defining the cylindrical boundary of said core, the first and second side walls of the cartons defining triangular alcoves which communicate with and project outwardly from said core;

C. said rear wall and said first and second side walls of said carton having vertical rows of openings at corresponding levels, the openings in said rear wall lying in the path of said swirling flow pattern, the openings in said first side



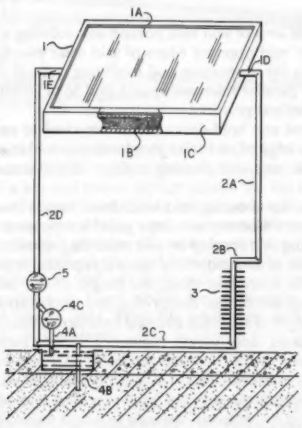
wall being adjacent the junction of this wall and the rear wall and also lying in said path, the openings in the second rear wall being adjacent the apex of the triangular alcove formed thereby and lying outside of said path, whereby heated air is injected into said rear wall and first side wall openings as a result of dynamic pressure forces produced by the swirling flow pattern, and is injected into said second side wall openings as a result of static pressure developed in said alcoves.

4,269,170

ADSORPTION SOLAR HEATING AND STORAGE SYSTEM

John M. Guerra, 56 Matchett St., Brighton, Mass. 02135

Filed Apr. 27, 1978, Ser. No. 900,703
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—428 **1 Claim**



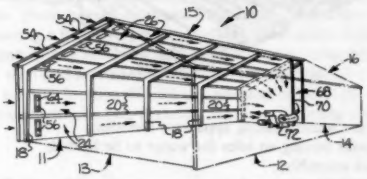
1. A solar thermal energy storage and collector system, comprising a collector housing having a gas inlet and outlet, said housing having therein a bed of zeolite material positioned to absorb heat produced by incident solar energy; a heat exchanger, means for circulating a gas through the heat exchanger, the housing inlet, the zeolite material, and back to the heat exchanger in a closed gaseous flow path, means for injecting atomized water into and condensing water vapor out of the circulating gas in a mutually exclusive operation, said injecting and condensing means positioned in the flow path between the heat exchanger and the housing inlet, whereby the zeolite material releases the latent heat of adsorption to the gas upon exposure of the material to the water adsorbate containing gas, and whereby the zeolite material is purged of the adsorbed water by the combined action of the incident solar energy, the circulating gas, and condensing means, thus completing the solar heating and storage cycle.

4,269,171

BUILDING STRUCTURE AND INTEGRAL SOLAR ENERGY COLLECTING APPARATUS

William H. McArthur, P.O. Box 236, Forest City, N.C. 28043

Continuation-in-part of Ser. No. 827,948, Aug. 26, 1978, Pat. No. 4,184,476. This application Sep. 25, 1978, Ser. No. 945,318
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—429 **19 Claims**



1. A building structure having a solar energy collector integrally incorporated therein, and wherein the solar energy collector is characterized by the absence of components which protrude outwardly beyond the normal contour of the building structure, and comprising

a plurality of exterior wall structures collectively defining an enclosure therebetween, each of said wall structures comprising a plurality of parallel, spaced apart structural support members,

a plurality of solar energy collectors disposed in said exterior wall structures, each of said collectors comprising

(a) exterior panel means which are transparent to solar radiation mounted to the outside edges of two adjacent support members and overlying a substantial portion of the area therebetween,

(b) interior panel means mounted to the inside edges of said two adjacent support members and being generally parallel to and transversely aligned with said exterior panel means, and

(c) solar energy absorptive panel means mounted parallel to and intermediate said exterior and interior panel means, such that an air passageway is defined by said two adjacent support members, interior panel means, and solar energy absorptive panel means,

inlet means adjacent corresponding ends of each of said collectors for admitting air into the associated passageway,

outlet means adjacent the opposite corresponding ends of each of said collectors for permitting air to exhaust from the passageway,

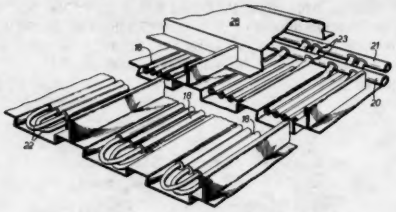
a plenum chamber disposed within said enclosure and communicating with each of said outlet means of said collectors, and

means operatively communicating with said plenum chamber for conveying air along said passageway of each collector from said inlet means to said outlet means thereof, and so as to be in heat transfer relationship with said solar energy absorptive panel means, whereby the solar energy is able to pass through said exterior panel means and warm said solar energy absorptive panel means, and the air passing through said passageways absorbs heat from said solar energy absorptive panel means and exhausts into said plenum chamber.

4,269,172
SOLAR WATER-HEATING APPARATUS

Peter D. Parker; Robert N. Walton, and Lawrence J. Walton, all of 8 Sunshine Blvd., Miami Keys, Queensland, Australia (4217)

Filed Nov. 4, 1977, Ser. No. 848,458
Claims priority, application Australia, Nov. 8, 1976, PC8037; Feb. 4, 1977, PC8945
Int. Cl.[3] F24J 3/02
U.S. Cl. 126—450 26 Claims



1. Solar water-heating apparatus including
a header having an inlet for water to be heated,
a duct assembly,
a manifold arranged to communicate with said header through said duct assembly,
a hot water discharge outlet from said manifold,
said duct assembly having a plurality of spaced-apart ducting members each being adapted to communicate with, for through-flow between, said header and said manifold through a respective one of a plurality of spaced-apart, plug-in connections provided along said header and said manifold, said ducting being a resilient plastic extrusion member of indefinite length and having a plurality of substantially identical passageways extending longitudinally therethrough and disposed in spaced side-by-side relationship, and
a roof sheet for supporting said ducting, said roof sheet having a rectantular body portion, upstanding complementary side engagement portions,
said body portion extending between said upstanding complementary side engagement portions whereby said sheet may be connected in operative edge-to-edge overlapping relationship with a similar sheet at each side thereof and said rectangular body portion including a re-entrant recess extending parallel to said engagement portions and arranged to closely accommodate therein said resilient ducting whereby the latter may be operatively retained in said recess by forcing said ducting through the entrance of and into said re-entrant recess.

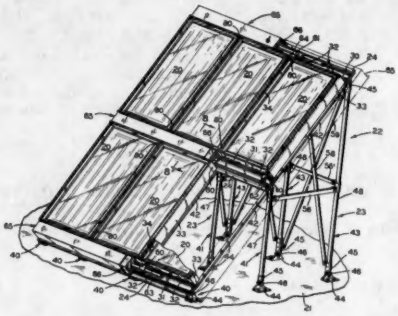
4,269,173
SYSTEM FOR MOUNTING SOLAR COLLECTOR PANELS

Wallace F. Krueger, Toledo; Anthony R. Shaw, and Jerry L. Smith, both of Waterville, all of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Apr. 27, 1978, Ser. No. 900,494
Int. Cl.[3] F24J 3/02
U.S. Cl. 126—450 2 Claims

1. In combination with a solar collector panel, a mounting apparatus for supporting the solar collector panel in a predetermined position comprising:
a. at least two modular sections constructed of standardized components;
b. a pair of mounting spars attached to said modular sections in parallel, spaced-apart relationship for supporting opposed edges of said solar panel, each said mounting spar comprising an elongated base, and upstanding rails;
c. hold-down brackets affixed to said opposed edges of said solar panel and extending over said rails for securing said solar panel to said mounting spars;
d. means fastening said hold-down brackets on said solar panel to said mounting spars;
e. manifold pipes connected to the solar collector panel for passing a fluid heat exchange medium through said solar collector; and
f. means for covering and insulating said manifold pipes, said covering and insulating means comprising an elongated insulating block and a flashing for covering and attaching said insulating block to said solar panel and said mounting spars, said insulating block comprising top and bottom sections, the bottom section being configured to receive said rails provided on said mounting spars.

2. In combination with a solar collector panel, a mounting system for supporting the solar collector panel in a predetermined position comprising:
a. at least two mounting spars disposed in a spaced-apart horizontally extending parallel relationship for supporting opposed edges of said solar panel, each said mounting spar comprising an elongated member having a base portion and an abutting portion projecting upwardly from the



central area of said base portion and defining a support for one of said opposed edges of said solar panel;
b. means for supporting said mounting spars in said spaced-apart parallel relationship and said solar panel in the predetermined position;
c. at least one hold-down means attached to each said opposed edge of said solar panel and disposed in a position to extend over said abutting position of said mounting spars; and
d. means for securing said hold-down means to said mounting spars whereby said solar panel is supported and held in abutting relationship on said mounting spars, said abutting portion of said mounting spars comprising a pair of parallel rails extending along the length of the base and said hold-down means comprising brackets disposed on the top edges of said rails and said hold-down brackets include elongated slots which register with apertures provided between the rails on said mounting spar and said securing means comprises bolts extending through said slots and said apertures whereby each opposed end of said solar panel is respectively fastened to a said mounting spar in a supporting and abutting relationship.

4,269,174
TRANSCUTANEOUS VASECTOMY APPARATUS AND METHOD

Edwin L. Adair, Littleton, Colo., assignor to Medical Dynamics, Inc., Englewood, Colo.

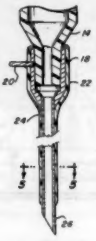
Filed Aug. 6, 1979, Ser. No. 63,805
Int. Cl.[3] A61B 19/00
U.S. Cl. 128—1 R 23 Claims

1. An apparatus to cauterize a body vessel within the body of

a patient without incising the patient's skin, said apparatus comprising:

a first electrode including a conducting hollow needle having a tip insertable through the body of the patient and positionable adjacent the vessel; and

a second electrode including a conducting probe having a



distal end positioned and slidably received in said hollow needle, said distal end being positionable adjacent the vessel and electrically insulated from said first electrode so that a source of electrical energy is connectable to said first and second electrodes so that an electrical path is provided between said first and second electrodes through the vessel to cauterize and close the vessel.

4,269,175

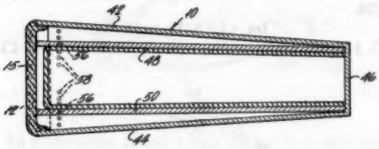
PROMOTING CIRCULATION OF BLOOD

Richard S. Dillon, 150 Mill Creek Rd., Ardmore, Pa. 19003

Continuation-in-part of Ser. No. 803,656, Jun. 6, 1977, abandoned. This application Oct. 30, 1978, Ser. No. 955,620

Int. Cl.³ A61H *1/00*

U.S. Cl. 128—24 R **2 Claims**



2. Apparatus for improving circulation of blood through a leg which comprises; a rigid enclosure having an opening for insertion of a leg and means fitting against the leg to seal the enclosure; an inflatable enclosure within said rigid enclosure; adjustable means comprising rigid walls movable to and temporarily fixable in a plurality of positions at varying distances from the inner wall of said rigid enclosure for varying the volume into which said inflatable enclosure can inflate; and means responsive to heart action for alternately supplying compressed gas to said inflatable enclosure and removing compressed gas therefrom.

4,269,176

TREATMENT HEAD FOR ELECTROMEDICAL DIAGNOSTIC OR THERAPEUTIC TREATMENT OF BODY PARTS

Johann Beyer, Baiersdorf, and Friedrich Strauber, Buckenhof, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

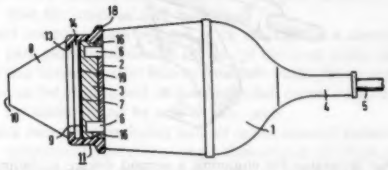
Filed Nov. 24, 1978, Ser. No. 963,583

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1977, 7738446[U]

Int. Cl.³ A61H *1/00*

U.S. Cl. 128—24 A **9 Claims**

1. A treatment head assembly for electromedical treatment of body parts, comprising an applicator with a first treatment surface (7) having an inner side and an outer side, electromedical treatment means (2, 3) coupled with the inner side of said first treatment surface (7) for activating said first treatment surface (7) for effecting electromedical treatment of a body part when the body part is disposed at the outer side of said first treatment surface (7), said electromedical treatment means (2, 3) comprising an ultrasonic transducer (2) with a first adapter piece (3) interposed between the transducer (2) and said first treatment surface (7), a second adapter piece (8) providing a second treatment surface (10) of different configuration than said first treatment surface (7), and having a base (9) in mating conforming overlying relation to said first treatment surface (7) at the outer side thereof such that the electromedical treatment means (2, 3) is coupled with said second treatment surface (10) of said second adapter piece (8) via said first adapter piece (3) and the first treatment surface (7) and said base (9) for effecting electromedical treatment of a body part disposed at said second treatment surface (10), and said second adapter piece having connected therewith an annular collar (11) having a finger emplacement (18) on the collar circumference and having releasable engagement means releasably engagable with said first adapter piece of said applicator for effecting a positive locking of said second adapter piece (8) to said applicator with the base (9) being held in said mating conform-



ing overlying relation to said first treatment surface (7), means comprising said finger emplacement (18) on said annular collar (11) for accommodating a rapid release of said adapter piece (8) from said first adapter piece (3) of said applicator to expose said first treatment surface (7) at the outer side thereof for direct association with a body part for effecting electromedical treatment thereof, said second adapter piece (8) having an annular groove (13) spaced from the base (9) and defining a shoulder (14), said annular collar (11) having a lip (12) engaged in said annular groove (13) and interlocked with said shoulder (14) to connect said second adapter piece (8) with said annular collar (11), the finger emplacement (18) comprising a circumferential ridge on the annular collar (11), said annular collar (11) being formed of resilient material, said electromedical treatment means (2, 3) including said ultrasonic transducer (2), comprising means for energizing said first treatment surface (7) with ultrasonic energy via said first adapter piece (3), and so as to produce an ultrasonic wavelength λ in said second adapter piece (8), said first adapter piece (3) having a thickness equal to a multiple of the half wavelength of the ultrasonic waves, and said second adapter piece (8) providing a length between its base (9) and said second treatment surface (10) equal substantially to a whole number multiple of the half wavelength ($\lambda/2$).

4,269,177

THERAPEUTIC DEVICE

Stanley M. Clark, 8049 Robin La., Brecksville, Ohio 44141

Filed Aug. 16, 1979, Ser. No. 67,112

Int. Cl.³ A61H *15/00*

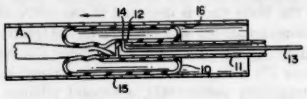
U.S. Cl. 128—57 **14 Claims**

1. A method of urging bodily fluids to flow from a limb into the body which comprises the steps of:

initally applying a fluid pressure to the limb at a first area remote from the body: and

thereafter applying a continuous rolling fluid pressure from

said first area progressively to successive adjacent areas of the limb closer to the body until a substantial portion of



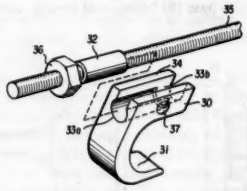
the limb has been subjected to said progressive rolling fluid pressure.

4,269,178

HOOK ASSEMBLY FOR ENGAGING A SPINAL COLUMN

James S. Keene, 6305 Keelson Dr., Madison, Wis. 53705

Filed Jun. 4, 1979, Ser. No. 45,402
Int. Cl.³ A61F *5/01*; F16B *7/06*
U.S. Cl. 128—69 **13 Claims**



1. An apparatus for engaging a second device including a second rod, a bone or a portion of a spinal column, said apparatus comprising:

(a) a rod;

(b) a sleeve means slidable along the length of said rod for engaging said rod;

(c) base means having a first and second end for engaging said sleeve means and having a bore extending therethrough from said first end to said second end for receiving said sleeve means; said base means having a slot parallel with and communicating with said bore, said slot having a width which is greater than the diameter of said rod and less than the outside diameter of the sleeve means;

(d) means for preventing said sleeve means from sliding out of said bore through said second end when said sleeve means is received within said bore through said first end;

(e) hook means connected to and projecting from said base means; and

(f) locking means cooperating with and independently moveable relative to said base means and said sleeve means and along said rod for engaging said rod, said locking means having a width greater than the inner diameter of said sleeve means.

4,269,179

ORTHOPEDIC GRAVITY TRACTION BRACE

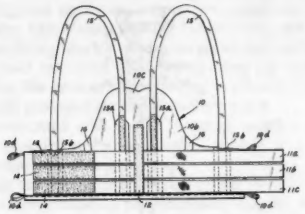
Charles V. Burton, Wayzata, and Wallace W. Lossing, Minneapolis, both of Minn., assignors to Abbot-Northwestern Hospitals Inc., Minneapolis, Minn.

Continuation of Ser. No. 683,276, May 5, 1976, abandoned. This application Mar. 22, 1979, Ser. No. 22,712
Int. Cl.³ A61H *1/02*
U.S. Cl. 128—75 **6 Claims**

1. An orthopedic lumbar traction brace, comprising:

(a) a torso surrounding vest having a layer uniformly made from stretchable material to conform to the contour of the lower rib cage and a portion of the torso therebelow;

(b) attachment means for securing the vest to a patient, the attachment means including a plurality of vertically spaced and circumferentially extending straps attached to the vest with each strap extending substantially completely around the vest, and further including means for tightening each strap in a circumferential direction with the lowermost strap being disposed immediately below the rib cage to substantially support the weight of the



patient and the remaining straps being located around the rib cage to firmly grasp the rib cage and prevent movement of the vest relative thereto; and

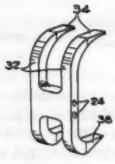
(c) support means connected to the vest for connecting the vest to means for holding the patient in a desired suspended position to apply gravity traction to the lumbar area of the spine.

4,269,180

BONE FASTENER FOR THE GREATER TROCHANTER

Desmond M. Dall, 108 Medical Centre, Heerengracht, Cape Town, Cape Province, and Anthony W. Miles, 15 E. Light Way, Kirstenhof, Cape Province, both of South Africa

Filed Mar. 19, 1979, Ser. No. 21,858
Claims priority, application United Kingdom, Mar. 30, 1978, 12365/78
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—92 B **12 Claims**



1. An implant for use in bone surgery, the implant comprising a base structure including a pair of limbs joined by a bridge, the bridge being bounded by a front face, a rear face and edge faces, a plurality of teeth protruding from the base structure, all the teeth lying on the same side of the base structure, and a hole in the base structure for receiving a cable, the hole being elongate in form, extending lengthways through the bridge, and being open at each end.

4,269,181

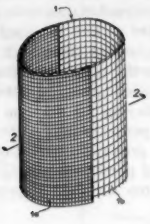
TUBULAR DRESSING WHICH IS COMPLETE BY ITSELF

Robert Delannoy, Paris, France, assignor to Molinier S.A., Loire, France

Filed Apr. 12, 1979, Ser. No. 29,522
Claims priority, application France, Apr. 21, 1978, 78 12864
Int. Cl.³ A61L *15/00*
U.S. Cl. 128—156 **8 Claims**

1. A complete tubular dressing in one piece comprising one

sector forming a dressing proper and one section made of extensible material which is sufficient to hold the dressing



securely on the body of a patient, wherein the dressing proper is made of woven hydrophilic material.

4,269,182

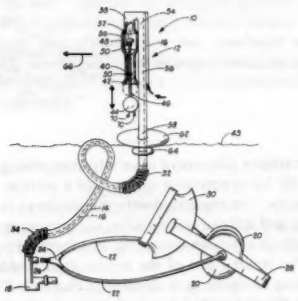
UNDERWATER BREATHING DEVICE FOR A SWIMMER

Be V. Le, 912 S. Terrace, Wichita, Kans. 67218

Filed Nov. 26, 1979, Ser. No. 97,368

Int. Cl.³ B63C *11/16*

U.S. Cl. 128—201.11 **2 Claims**



1. An underwater air and sound device for a swimmer, the device comprising:

a first vertical tube having an upper end portion and a opened lower end portion for receiving air therethrough, the lower end portion adapted to be disposed above the water level;

a second vertical tube having an upper end portion and a lower end portion, the upper end portion communicably connected to the upper end portion of the first tube, the tubes having an upside down "J" appearance;

a buoy attached to the lower end portion of the second tube for holding the tubes upright in the water;

a mouth piece adapted for receipt in the swimmer's mouth when the swimmer is under water;

a flexible air line with one end communicably connected to the lower end portion of the second tube, the other end of the air line attached to the mouth piece;

a ball shaped float having a float rod attached thereto, the float rod extending upwardly into the lower end portion of the first tube, the end of the rod attached to a float rod valve, the first tube having a valve seat integrally formed therein, the rod valve received in the valve seat when the float is raised upwardly by water pressure applied thereon;

ear covers adapted for receipt over the swimmers ears; and

a sound tube connected to the upper end portion of the second tube and extending downwardly therethrough and through the flexible airline, the lower end of the sound tube connected to the ear covers.

4,269,183

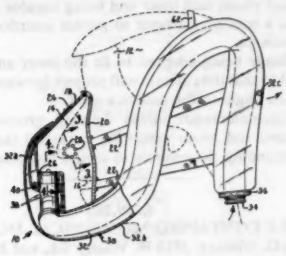
COLD WEATHER BREATHING MASK

Patrick T. Hunt, R.R. 1, Smithville, Mo. 64089

Continuation-in-part of Ser. No. 24,168, Mar. 26, 1979, abandoned. This application Feb. 13, 1980, Ser. No. 121,119

Int. Cl.³ A61M *15/00*

U.S. Cl. 128—201.13 **10 Claims**



1. A breathing device comprising:

a mask for convering the mouth and nose of a wearer,

said mask having an inlet and an outlet;

air intake conduit means having an outlet in communication with the inside of said mask,

said conduit means adapted to be disposed in a curvilinear path along a substantial portion of the head of the wearer and having an inlet remote from said outlet for air passage;

means for closing said air intake conduit means outlet during exhalation of air by said wearer; and

sack means for enclosing said air intake conduit means over substantially the entire length thereof and therefore, along a substantial portion of the head of the wearer thereby being in heat exchange communication with the head of the wearer,

said sack means being disposed in communication with said mask outlet and having an opening for egress of air remote from the place of communication with said outlet whereby, heat from exhaled air as well as body heat normally lost through radiation from the head adjusts the temperature of air to be inhaled.

4,269,184

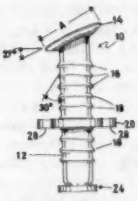
SILICONE TRACHEAL CANNULA

William W. Montgomery, 243 Charles St., Boston, Mass. 02114

Filed Feb. 28, 1980, Ser. No. 125,260

Int. Cl.³ A61M *25/00*

U.S. Cl. 128—207.14 **10 Claims**



1. A tracheal cannula adapted to be inserted in a round incision in the patient's trachea in place of the usual tracheotomy tube, said cannula comprising

a tube of tissue-compatible material having an outer open end, an inner open end and a lumen of diameter sufficient to provide an adequate airway for the patient after insertion and an outer diameter adapted to fit said incision,

said tube having

at least one circumferential barb near its inner end adapted

to engage the patient's tissue within the incision to discourage accidental outward displacement after insertion,

a plurality of circumferential ridges located between the outermost of said barbs and its outer open end, and

said inner open end having a periphery which lies in a plane at an acute angle to the longitudinal axis of said tube and is surrounded by a flexible flange also lying in said plane, said inner end being capable of being flexed to a smaller diameter to permit insertion throught the incision,

said flange being adapted to fit the inner anterior tracheal wall so that the cannula will project forward at a predetermined angle to the patient's neck,

said circumferential ridges defining grooves adapted to receive and retain means for engaging the patient's skin surrounding the cannula to secure the latter in place.

4,269,185

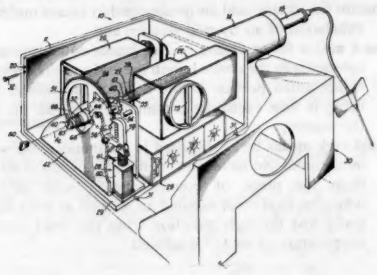
SELF CONTAINED MECHANICAL INJECTOR

Douglass G. Whitney, 2518 W. Wesley Rd., and John K. Martin, III, 2837 Ridge Wood Cir., both of, Atlanta, Ga. 30327

Continuation-in-part of Ser. No. 1,091, Jan. 8, 1979, which is a division of Ser. No. 741,528, Nov. 12, 1976, Pat. No. 4,150,672, and a continuation-in-part of Ser. No. 741,528, Nov. 12, 1976, Pat. No. 4,150,672, and a continuation-in-part of Ser. No. 964,953, Nov. 30, 1978. This application Mar. 29, 1979, Ser. No. 25,047

Int. Cl.[3] A61M *5/00, 5/20*

U.S. Cl. 128—214 F **12 Claims**



1. Apparatus for selectively dispensing a fluid at a controlled slow rate into a patient comprising:

container means defining a fluid chamber therein for containing the fluid to be dispensed and defining a fluid outlet therefrom through which the fluid is to be dispensed into the patient;

expelling means operatively associated with the fluid in said container means to expel the liquid from said container means, said expelling means including a piston member slidably mounted in said fluid chamber for positively forcing the fluid from said fluid chamber as said piston member moves toward the outlet end of said fluid chamber, said piston member moved toward the outlet end when said expelling means is driven;

spring operated driving means for selectively driving said expelling means to force said piston member toward the outlet end of said fluid chamber; and

control means operatively connected to said driving means for selectively and successively causing said driving means to move said piston member to successively and incrementally force the fluid from said fluid chamber in said container means into the patient at a selected prescribed average rate over a prolonged period of time, said control means alternatively releasing said driving means for a first prescribed short period of time fo fixed duration so that said driving means causes said expelling means to force fluid from said fluid chamber in said container means at a first prescribed rate greater than the selected prescribed average rate and said control means alternatively arresting the operation of said driving means for a second prescribed short period of time to stop the fluid flow from said fluid chamber so that the fluid is forced from said fluid chamber in said container at the selected prescribed average rate over the sum of said first and second periods of time, said control means including adjustment means for selectively varying the duration of only said second prescribed short period of time without varying the duration of said first prescribed period of time to selectively vary the selected prescribed average rate at which the fluid is forced from said fluid chamber of said container into the patient.

4,269,186

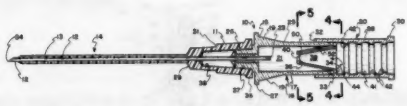
INTRAVENOUS NEEDLE ASSEMBLY WITH AIR BLEED PLUG

James C. Loveless, and Darrel R. Palmer, both of Sandy, Utah, assignors to The Deseret Company, Sandy, Utah

Continuation-in-part of Ser. No. 916,657, Jun. 16, 1978, Pat. No. 4,193,400. This application Sep. 26, 1979, Ser. No. 78,982

Int. Cl.[3] A61M *5/00*

U.S. Cl. 128—214.4 **6 Claims**



1. A catheter placement assembly comprising:

a needle for penetrating the vein of a patient;

a catheter tube associated with the needle to be placed in the vein and left indwelling after venipuncture;

a flashback chamber connected at a forward portion thereof to the trailing end of the needle, said flashback chamber having an opening at its trailing end;

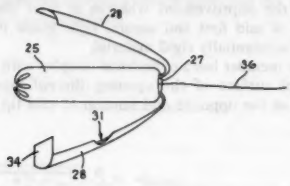
an air bleeder male plug formed of a substantially shape-retaining biologically inert material and comprising body means removably secured to the trailing end of the flashback chamber, said male plug having a longitudinal axis and comprising means substantially closing the trailing end opening of the flashback chamber, said closing means comprising a forward closed end portion and sidewall means merging with the forward closed end portion and extending generally rearward in close partial contiguous relation with the trailing end of the flashback chamber, the closing means further comprising transversely directed generally annular flange means disposed entirely beyond said trailing end of said flashback chamber and integrally merging with the trailing end of the sidewall means said annular flange means being disposed within said body means and being transversely spaced from the longitudinal centerline of the male plug, the flange means comprising relatively small generally longitudinally directed port means providing continuous gaseous communication along the side wall means and through the flange means between the flashback chamber and the atmosphere immediately adjacent the trailing end of the flashback chamber, the relation of the body means and flashback chamber being such that a path of least fluid flow resistance from the flashback chamber to the atmosphere exists along said side wall means and through said port means, said small port means having a very small longitudinal dimension for accommodating passage of air to the atmosphere while substantially preventing passage of egress blood through the small opening means.

4,269,187

TAMPON

Akira Sakurai, Sakura; Yoshimi Tsuchiya, and Hiroshi Mizutani, both of Yachiyo, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Oct. 11, 1979, Ser. No. 83,741
Claims priority, application Japan, Nov. 2, 1978, 53/135298
Int. Cl.[3] A61F *15/00*
U.S. Cl. 128—263 3 Claims



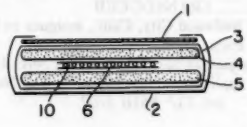
1. A tampon comprising an applicator having an outer cylinder and an absorbent material push-out portion and an absorbing material contained in said applicator, characterized in that the inner diameter of the rear end portion of said outer cylinder is smaller than the inner diameter of the barrel portion of said cylinder and said absorbent material push-out portion has a cavity in the center thereof and comprises a push-out top end contained in said outer cylinder and an inserting supporting piece connected to said push-out top end and folded outwardly from said outer cylinder.

4,269,188

DISPOSABLE DIAPER

Kazunori Nishizawa, Funabashi; Toshihiro Shirose, Soka, and Osamu Itoh, Funabashi, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Jul. 23, 1979, Ser. No. 59,500
Claims priority, application Japan, Jul. 28, 1978, 53/92196
Int. Cl.[3] A41B *13/02*
U.S. Cl. 128—287 4 Claims



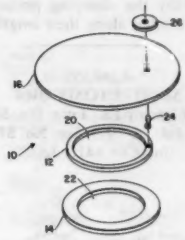
1. In a disposable diaper comprising a liquid-permeable top sheet, a liquid-impermeable bottom sheet, an upper layer of fluff pulp disposed between said top and bottom sheets and being located adjacent said top sheet, a lower layer of fluff pulp disposed between said top and bottom sheets and being located adjacent said bottom sheet, and a water-absorbing sheet disposed between said upper fluff pulp layer and said lower fluff pulp layer, said water-absorbing sheet being made of upper and lower plies having particles of water-absorbing polymer confined therebetween, said upper and lower plies being located adjacent said upper fluff pulp layer and said lower fluff pulp layer, respectively, said upper and lower plies both having a multitude of slits therethrough, the improvement which comprises: said lower ply is made of a low wet strength paper and said upper ply is made of a high wet strength paper so that urine can permeate relatively freely from said upper fluff pulp layer through the slits into said lower fluff pulp layer and permeation of urine in a direction from said lower fluff pulp layer toward said upper fluff pulp layer is inhibited.

4,269,189

SKIN CONDUCTING ELECTRODE ASSEMBLY

William W. Abraham, New Hartford, N.Y., assignor to Consolidated Medical Equipment Inc., Utica, N.Y.

Filed Jul. 9, 1979, Ser. No. 55,811
Int. Cl.[3] A61B *17/39*
U.S. Cl. 128—303.13 7 Claims



1. A skin conducting electrode assembly for use on a patient comprising in combination,

an electrode comprising a thin conductive plate containing a wholly enclosed interior aperture therein defined by an inner edge of the electrode, the shapes of both the outer edge of the electrode and the inner edge of the electrode being rounded;

means for making an electrical connection to said electrode;

an adhesive pad in adhesive contact with one said of said electrode;

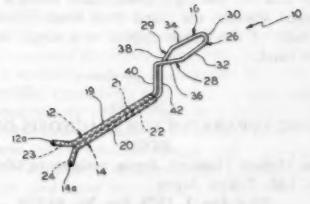
a gel pad in contact with the other side of the electrode and extending slightly beyond the inner and outer edges of the electrode so as to prevent direct contact by the electrode with the skin of a patient, said gel pad including a wholly enclosed interior aperture, said adheisve pad extending beyond the outer edge of said gel pad around the entire periphery thereto and extending over the interior aperture in the gel pad, said interior aperture in said gel pad corresponding in shape to the shape of the interior aperture of the electrode, and being of a size such as to ensure that when the electrode assembly is placed in contact with a patient's skin, said adhesive pad seals the electrode assembly both around the the periphery thereof and within said interior aperture of said gel pad to maintain said electrode assembly in firm contact with the skin of the patient.

4,269,190

METHOD OF AND CLAMP FOR APPLYING PRESSURE TO A SKIN REGION

Charles A. Behney, Box 4337, Bisbee, Ariz. 85603

Filed Jul. 23, 1979, Ser. No. 59,504
Int. Cl.[3] A61B *17/08*
U.S. Cl. 128—325 7 Claims



4. A skin clamp which comprises: a length of spring wire bent to form a pair of clamping arms extending forwardly from a manipulating handle, each of said arms having a rearwardly disposed elongated clamping portion and a forwardly disposed

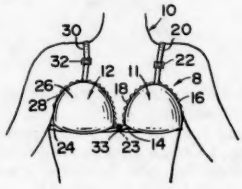
relatively short guiding portion, said clamping portions lying adjacent to each other along their length in a plane for clamping a skin fold between them, said guiding portions extending forwardly from said clamping portions and outwardly from the plane of the clamping portions to one side of such plane, said guiding portions diverging forwardly for guiding a skin fold between the clamping portions, said handle including a bight portion connected to the rear ends of respective clamping portions, whereby the clamping portions are resiliently biased towards each other along their length.

4,269,191

MASTECTOMY BRA

Annette Evans, 16 Lightsey La., Lutz, Fla. 33549

Filed Jul. 16, 1979, Ser. No. 57,846
Int. Cl.³ A41G 3/00
U.S. Cl. 128—488 **5 Claims**



1. A bra specifically adapted for a female having a single breast, comprising in combination:

a left bra element comprising:

a left bra cup specifically designed for receiving the left breast of the female or a prosthesis,

a left chest band secured to said left bra cup for encircling the chest of the female,

a left shoulder strap secured between said left bra cup and said left chest band for extending across the left shoulder of the female for supporting said left bra cup,

a right bra element comprising;

a right bra cup specifically designed for receiving the right breast of the female or a prosthesis,

a right chest band secured to said right bra cup for encircling the chest of the female,

a right shoulder strap secured between said right bra cup and said right chest band for extending across the right shoulder of the female for supporting said right bra cup,

a bra clasp disposed in at least one of said left and said right chest bands for removably securing one of said left and said right chest bands about the chest of the female;

said left bra element being independent of said right bra element enabling one of said left or right bra cups to be removed to expose the breast of the female while simultaneously enabling the other of said left or right bra cups to remain in place to cover the prosthesis of the female; and

each of said left and right chest bands being a thin elastic material whereby the plural chest bands extending about the back of the female appear as a single conventional chest band.

4,269,192

STABBING APPARATUS FOR DIAGNOSIS OF LIVING BODY

Kazumasa Matsuo, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1979, Ser. No. 44,570
Claims priority, application Japan, Dec. 2, 1977, 52-162019
Int. Cl.³ A61B 1/00, 5/00
U.S. Cl. 128—665 **4 Claims**

1. In a stabbing apparatus for diagnosis of a living body having;

a tubular member having a sharp-edged tip end portion;

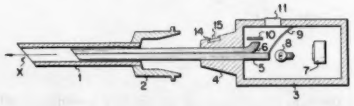
a first light guide means inserted in said tubular member and having one end disposed at said tip end portion;

a second light guide means inserted in said tubular member and having one end disposed at said tip end portion;

a light source means applying light to the other end of said first light guide means in order to deliver light through said tip end portion; and

a photosensing means at the other end of said second light guide means for sensing light reflected to said tip end portion; the improvement wherein at least the tip end portions of said first and second light guide means are made of substantially rigid material;

said tubular member has a cylindrical coupler with the inner peripheral surface of the opening thereof tapered and disposed at the opposite end portion to said tip end portion, a case containing said light source means and said photosensing means at the other end side of said first and second light guide means, and a projection on said case having along the outer periphery thereof a tapered surface matching with the tapered surface of said coupler, and penetrated by said first and second light means, whereby said tubular member and said case are coupled with each other by means of the tapered surfaces of said coupler and said projecton engaging each other;



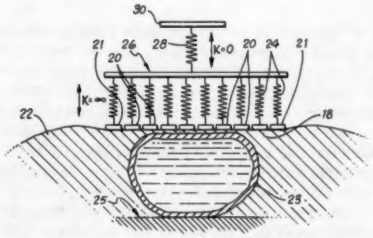
said photosensing means including a photosensitive device disposed at the other end face of said second light guide means, whereby a signal corresponding to the intensity of light emitted from said other end face is delivered, and an indicator device mounted at a given position of said case to indicate the existence of tissue and to reflect light just in front of said tip end portion in accordance with the signal from said photosensitive device.

4,269,193

NONINVASIVE BLOOD PRESSURE MONITORING TRANSDUCER

Joseph S. Eckerle, Redwood City, Calif., assignor to SRI International, Menlo Park, Calif.

Continuation-in-part of Ser. No. 848,754, Nov. 4, 1977, abandoned. This application Nov. 15, 1979, Ser. No. 94,670
Int. Cl.³ A61B 5/02
U.S. Cl. 128—672 **9 Claims**



1. A system for the continuous external measurement of blood pressure in an underlying artery including at least one array of individual pressure sensitive elements, each of said individual pressure sensitive elements in said array having at least one dimension smaller than the lumen of the underlying artery in which blood pressure is measured and spaced in such

a manner that more than one of said individual pressure sensitive elements is over at least a portion of the underlying artery, each of said pressure sensitive elements being capable of producing a continuous waveform having an amplitude which is a function of blood pressure in an underlying artery, and selecting means to select the one pressure sensitive element that has a local minimum of at least one of the diastolic and systolic pressures from the said individual pressure sensitive elements within substantially one artery diameter of the one of said pressure sensitive elements which generates the waveform of maximum pulse amplitude.

4,269,194

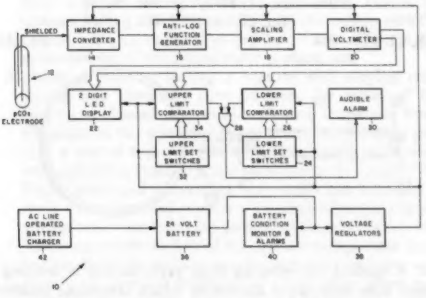
CARBON DIOXIDE MEASUREMENT FROM EXPIRED GASES IN A PARTIAL REBREATHING ANESTHESIA CIRCUIT

Robert L. Rayburn, 12522 La Manana, San Antonio, Tex. 78233; Robert L. Watson, 4019 Bentway, San Antonio, Tex. 78217; Charles R. Elbel, 632 Ogden La., San Antonio, Tex. 78209, and Karl W. Schweickardt, 12914 Cima Linda, San Antonio, Tex. 78233

Continuation of Ser. No. 876,997, Feb. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 840,400, Oct. 7, 1977, Pat. No. 4,188,946. This application May 17, 1979, Ser. No. 40,056

Int. Cl.[3] A61B *5/08*

U.S. Cl. 128—719 **7 Claims**



1. A method of determining arterial carbon dioxide tension from mixed expired gases of a patient utilizing a partial rebreathing anesthesia circuit consisting of the following steps:

measuring continuously carbon dioxide tension of said mixed expired gases with an electrode inserted therein, an output of said electrode having a high impedance;

converting said high impedance of said elecrode output in an impedance converter to a lower impedance level;

shielding and isolating said electrode output until conversion to said lower impedance;

generating an antilog function from said lower impedance level of said electrode output;

scaling said anilog function to account for variations between carbon dioxide tension of said mixed expired gases and said arterial carbon dioxide tension, to give a scaled output signal directly related to said arterial carbon dioxide tension, said variations including an arthmetic addition to said antilog function to give said scaled output signal thereby accounting for diffusion, mixing and temperature variations.

4,269,195

APPARATUS FOR MEASURING A PULMONARY FUNCTION

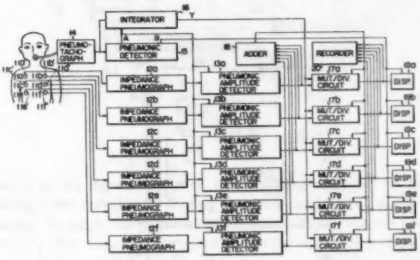
Ayao Itoh, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 23, 1979, Ser. No. 41,708

Claims priority, application Japan, May 31, 1978, 53-64290

Int. Cl.[3] A61B *5/08*

U.S. Cl. 128—723 **7 Claims**



1. An apparatus for measuring a pulmonary function, comprising:

a plurality of paired electrodes adapted for attachment to locations on a human thorax corresponding to the lungs of a human being, each of said paired electrodes including a current supply electrode element and voltage detection electrode element;

means for measuring impedances at the respective locations of the lungs, said means including a constant current source for supplying a constant current to the current supply electrode of each electrode pair;

detecting means coupled to said voltage detection electrode of each of said paired electrodes for detecting impedance variations indicative of respiratory movement from the impedances at the respective locations of the lungs;

sum calculating means for calculating a sum of the impedance variations detected by said detecting means;

ratio calculating means for calculating a ratio of each of the impedance variations to the sum of the impedance variations which is obtained by said sum calculating means; and

means for determining the pulmonary function using the ratio data obtained by said ratio calculating means.

4,269,196

PEDIATRIC TIDAL VOLUME INDICATOR AND VENTILATOR ADAPTATION

Norman D. Toms, P.O. Box 70, Argyle, Manitoba, and Jules O. Legal, 89 Elm Park Rd., Winnipeg, Manitoba, both of Canada

Filed Apr. 3, 1978, Ser. No. 892,838

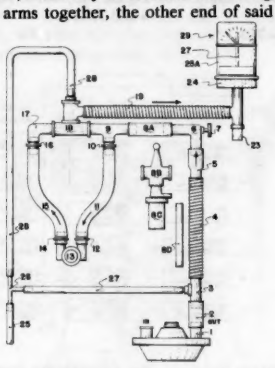
Claims priority, application United Kingdom, Apr. 5, 1977, 14337/77

Int. Cl.[3] A61B *5/08*

U.S. Cl. 128—727 **10 Claims**

1. An improvement in a pediatric tidal volume indicator and ventilator system used therewith comprising in combination, a spirometer, a vertically moving shaft in said spirometer and a read-out amplifier operatively connected to said shaft, selective means operatively connecting said ventilator system to said spirometer, said ventilator system including means to segregate same into a machine system and a patient system whereby, upon inspiration, said spirometer is isolated from said patient system, and upon exhalation, said machine system is isolated from said patient system and said patient system is operatively connected to said spirometer, said means to segregate including a unidirectional check valve between said systems, one side of said unidirectional valve being connected to said machine system, the other side of said unidirectional valve being connected to said patient system, said machine system of

said ventilator system including a source of gas under pressure, and a first exhalation valve assembly operatively connected to said source and to said one side of said unidirectional check valve, said patient system of said ventilator system including a circle tubing component comprising an inspiratory arm and an expiratory arm, an airway bifurcation connecting one end of each of said arms together, the other end of said inspiratory



arm being operatively connected to said other side of said unidirectional check valve, said selective means operatively connecting said ventilator system to said spirometer including a second exhalation valve assembly operatively extending between the other end of said expiratory arm and said spirometer and said second exhalation valve assembly being operatively connected to said source of gas under pressure.

4,269,197

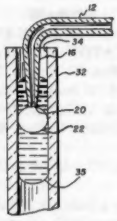
METHOD OF MEASURING TEAR OSMOLARITY AND APPARATUS THEREFOR

Jeffrey P. Gilbard, Box 239, Vanderbilt Hall, 107 Ave. Louis Pasteur, Boston, Mass. 02115

Filed Apr. 5, 1979, Ser. No. 27,373

Int. Cl.[3] A61B *10/00*

U.S. Cl. 128—763 **5 Claims**



1. A substantially L-shaped pipette having a continuous bore therethrough, for collection of tear samples comprising:

(a) a stem portion having an internal bore and

(b) a tail portion, oriented generally perpendicular to said stem portion, said tail portion having an internal bore diameter of from about 0.05 mm to about 0.2 mm and an external diameter of from about 0.1 mm to about 0.25 mm wherein the open end of said tail portion is in the part of said tail portion most distant from said stem portion, said tail portion having an internal bore diameter smaller than the internal bore diameter of said stem portion.

4,269,198

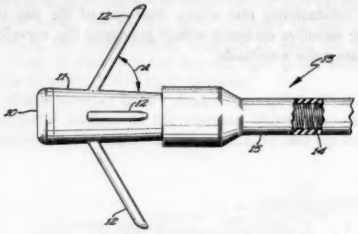
BODY IMPLANTABLE LEAD

Kenneth B. Stokes, Minneapolis, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Dec. 26, 1979, Ser. No. 106,854

Int. Cl.[3] A61N *1/04*

U.S. Cl. 128—785 **10 Claims**



1. In a body implantable lead of the type having a lead body, at least one electrode carried by said lead body and tine means extending at an acute angle from said lead body adjacent said electrode, the improvement wherein said lead body has a spring constant of less than 2.0 lb-in./10 in. and said tine means have a stiffness less than 5×10^{-3} lb-in.^{2}, said tines being 2 mm to 6 mm long.

4,269,199

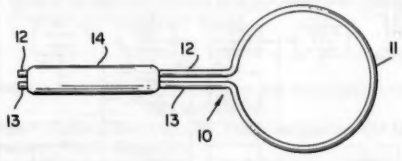
INDUCING LOCAL HYPERTHERMIA BY INDUCTIVE DIATHERMY

David Armitage, Bangor, Wales, assignor to Harry H. Leveen, Charleston, S.C.

Filed Mar. 14, 1979, Ser. No. 20,356

Int. Cl.[3] A61N *1/40*

U.S. Cl. 128—804 **5 Claims**



1. A method for inducing local hyperthermia in treating a tumor with short-wave diathermy which comprises positioning an induction coil with the axis thereof transecting a portion of the body containing the tumor while electrically energizing said coil at a radio frequency, and rapidly moving said coil relative to said body through a repetitive path in a direction approximately normal to said axis of said coil such that said axis of said coil constantly transects different portions of said tumor and the normal tissue adjacent said tumor.

4,269,200

FEEDING ARRANGEMENT FOR AN AXIAL FLOW ROTARY COMBINE

Karl G. Gorsler, Zweibrücken, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Jun. 25, 1979, Ser. No. 51,591

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1978, 2830162

Int. Cl.[3] A01F *7/06, 12/10*

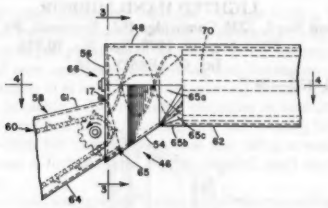
U.S. Cl. 130—27 T **6 Claims**

1. In a combine harvester having a generally fore-and-aft and horizontally disposed axial flow rotary separator including a threshing portion in which a rotor is rotatably mounted and

surrounded by a generally cylindrical separator housing, the rotor having upstream threshing and downstream separating portions and cooperating with the housing to thresh and separate crop material received at the threshing portion of the separator while conveying the material in a spiral path downstream in an annular space between the rotor and the separator housing, the combine also including a forward mounted header including a gatherer for removing crop material from a field as the harvester advances, an improved feeding arrangement for transferring crop material from the gatherer to the threshing portion of the separator comprising:

a rotor infeed portion coaxial and rotatable with the separator rotor and including outwardly extending helically extending conveying elements disposed upstream of the rotor threshing portion and having an outside diameter approximately equal to that of the rotor threshing portion;

a feeder house included in the header and including a chain and slat conveyor having a lower conveying run moving rearwardly and upwardly and a return run above it, the feeder house being wider than the separator and including opposite upright side walls and a rearwardly and upwardly sloping floor parallel to and spaced below the conveying run of the conveyor, the space between the



floor and the conveying run comprising a conveying channel having an inlet in a receiving relationship with the gatherer and an outlet disposed below and adjacent the upstream end of the infeed rotor portion; and

a transition housing having a bottom wall sloping rearwardly and upwardly from adjacent the outlet of the conveying channel to meet the cylindrical separator housing adjacent the upstream end of the rotor threshing portion, a pair of opposite generally upright side walls, each wall extending from adjacent an opposite side wall of the feeder house and converging rearwardly and inwardly to meet the cylindrical separator housing adjacent the upstream end of the threshing portion of the rotor, a top wall which continues the line of the cylindrical separator housing parallel to the rotor axis and a forward transverse wall closely adjacent the forward end of the rotor infeed portion so that in operation crop material discharged from the outlet of the conveying channel is guided rearwardly and upwardly by the bottom wall and at the same time converged inwardly by the opposite side walls to be engaged by a lower portion of the rotor infeed portion and conveyed rearwardly into the threshing portion of the separator.

4,269,201

CIGARETTE WEIGHT CONTROL SYSTEMS

Gordon F. W. Powell; Reginald C. Bolt, and Albert Simmons, all of London, England, assignors to Molins Limited, Great Britain

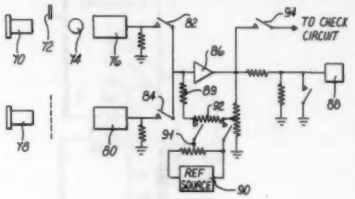
Filed Mar. 27, 1978, Ser. No. 890,816

Claims priority, application United Kingdom, Mar. 31, 1977, 13741/77

Int. Cl.³ A24C *5/32, 5/34*

U.S. Cl. 131—280 **11 Claims**

1. A cigarette weight control system for a continuous-rod cigarette-making machine having a rod guide, said system including a radiation source and a radiation detector positioned on mutually-opposite sides of said rod-guide, shutter means including a shutter for covering the radiation source when no rod or other beta-ray absorbing member is present in the guide, and a test circuit comprising control means connected to the said shutter means for selectively opening the shutter when no rod is present in the guide, signal level detection means con-



nected to the signal output of the radiation detector for producing a test signal representing the radiation level of radiation passing through the guide in the absence of the rod or other beta-ray absorbing member, and means for actuating a warning device if the signal level of said signal is outside of a predetermined range.

4,269,202

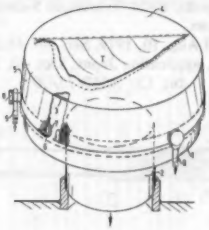
METHOD AND DEVICE FOR STRETCHING TOBACCO LEAVES OR PORTIONS THEREOF

Wilhelmus P. L. Boogers, Eindhoven, Netherlands, assignor to Arenco P.M.B. B.V., Best, Netherlands

Filed Apr. 19, 1978, Ser. No. 897,862

Int. Cl.³ A24B *3/00, 3/16, 3/18*

U.S. Cl. 131—290 **9 Claims**



1. A method of stretching a tobacco leaf or portions thereof characterized by the deposition of each tobacco leaf on an omnidirectionally elastic carrier, by exerting a pressure on the leaf on the side remote from the carrier and by subsequently applying adequate tensile stress around the leaf in the plane of the carrier in order to stretch the leaf omnidirectionally by an excessive extension of the carrier.

4,269,203

ANTI-SMOKING DEVICE

Lacey O. Corbett, 208 Sandwich St., Plymouth, Mass. 02630

Filed Feb. 15, 1980, Ser. No. 121,719

Int. Cl.³ A24F *47/00*

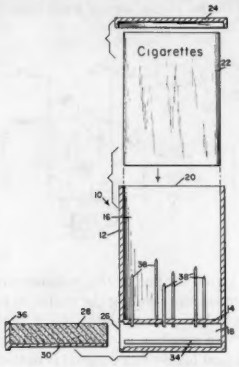
U.S. Cl. 131—270 **12 Claims**

1. A device for use with a package of cigarettes to discourage the user from smoking, comprising:

(a) a hollow carrying case, having an opening at the top,

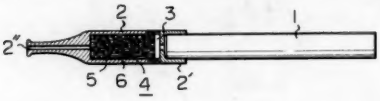
(b) a partition dividing the interior of the carrying case into an upper chamber for receiving a package of cigarettes through said opening so that the bottom of the package rests against the partition, and a lower chamber containing an unpleasant odiferous substance,

(c) a plurality of hollow needles extending from the lower chambers into the upper chamber, the needles being arranged to penetrate at least some of the cigarettes in the cigarette package as said package is inserted into the



upper chamber, the upper and lower ends of each needle having an opening, whereby said odiferous substance is allowed to pass from the lower chamber into each cigarette penetrated by a needle.

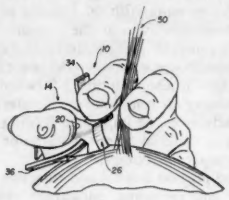
4,269,204
CIGARETTE FILTER
Takeyoshi Yamaguchi, 20-24, Tsurumaki 5-chome, Setagaya-ku, Tokyo 154, Japan
Filed Aug. 10, 1979, Ser. No. 65,533
Claims priority, application Japan, Oct. 13, 1978, 53-125083
Int. Cl.³ A24B *15/00*
U.S. Cl. 131—341 **8 Claims**



1. A cigaret filter comprising dry and active green algae in the form of chlorella incorporated in a columnar carrier of porous material for trapping toxic substances in cigaret smoke while allowing said smoke to pass through the carrier, said chlorella being of an amount in the range of about 20 to 50 mg. for said carrier of 8×20 mm.

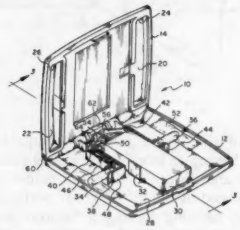
4,269,205
THUMB HAIR GAUGE
Carl A. Clark, and Kathleen J. Clark, both of 701 Broadway, #2, Galveston, Tex. 77550
Filed Oct. 18, 1979, Ser. No. 85,946
Int. Cl.³ A45D *24/36*
U.S. Cl. 132—45 R **7 Claims**

1. A hand-held hair gauge comprising:
support means adopted to fit around the thumb of a user, said support means having a portion engageable with the scalp of a user and an adjustable ring member for receiving a thumb therein,
index finger saddle means movably mounted on said support means, and



means for releasably retaining said saddle means in a selected position relative to said support means.

4,269,206
LIGHTED HAND MIRROR
Raymond Boyd, 2235 Cambridge Rd., Broomall, Pa. 19008
Filed Aug. 29, 1979, Ser. No. 70,916
Int. Cl.³ B65D *1/34*
U.S. Cl. 132—79 F **7 Claims**

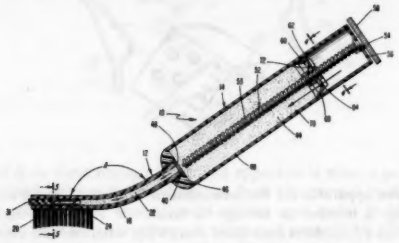


1. A lighted hand mirror comprising:
a shallow bottom case member;
a shallow cover member having a configuration complementary to the peripheral configuration of said bottom case member;
hinge means joining said bottom case member and said cover member, so that said bottom member and said cover member are movable between an open position and a closed position;
a mirror carried by said cover member;
light diffusing means positioned on said cover member adjacent said mirror;
a battery positioned within said bottom case member;
electrically operated illuminating means within said bottom case member and being positioned so as to lie behind said light diffusing means when said bottom case member and said cover member are in said closed position;
switch means within said bottom case member and including movable actuator means;
circuit means electrically interconnecting said battery, said illuminating means and said switch means;
a cam element, axially aligned with, and pivotally mounted on part of, said hinge means, and including a cam surface adapted to engage said actuator means for alternately moving the same between an off position and an on position when said cam element is pivoted, and
a tab means extending from said cam element externally of said bottom case member and said cover member for manually pivoting said cam element.

4,269,207
COMBINED TOOTHBRUSH-TOOTHPASTE CONTAINER

Czeslaw Konrad, and Janina Konrad, both of 2687 Neibel, Hamtramck, Mich. 48212

Filed Dec. 27, 1979, Ser. No. 107,642
Int. Cl.³ A45D *44/18*
U.S. Cl. 132—84 B **7 Claims**



1. A disposable toothpaste container for use with a toothbrush of the type comprising a stem, a bristle-carrying head formed integrally of plastic with said stem, a channel extending through said stem and head and opening into the region of said bristles by means of at least one outlet opening in said head, and a manually actuable valve rotatably mounted in said channel with said at least one outlet opening, said valve being frictionally held within the channel such that the valve is easily removable from a forward end of the channel, said container comprising:

a plastic cylindrical housing forming a toothpaste-containing chamber therein, said housing being connectable with said stem and including an outlet aperture at a front thereof,

a threaded pin extending generally axially within said chamber,

a piston threadedly connected to said pin and disposed in contact with an inner wall of said housing between the toothpaste and a rear wall of said housing, said piston comprises a flat rigid disk portion and a sealing edge disposed along the peripheral edge of said disk and inclined toward said front end of said housing, said edge being tapered toward said inner wall of said housing,

a rotary wall located externally of said housing adjacent said rear wall and connected to said threaded pin such that rotation of said wheel produces axial displacement of said piston to express toothpaste through said outlet aperture, and

a removable plug disposed within said outlet aperture.

4,269,208
ELECTROPLATING APPARATUS

Dale J. Koering, 1697 Laurel Ave., Saint Paul, Minn. 55104

Division of Ser. No. 937,060, Aug., 1978, Pat. No. 4,192,331.
This application Sep. 17, 1979, Ser. No. 76,361
Int. Cl.³ B08B *3/04*
U.S. Cl. 134—60 **3 Claims**

1. An apparatus for concentrating contaminants contained in a rinse discharge, from a shower rinse with work support means, flowing through a discharge outlet conduit, which comprises:

(a) a plurality of tanks including a first and a last tank;

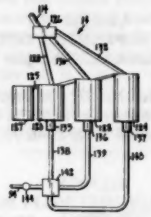
(b) first valve means in the discharge conduit for splitting the rinse discharge from a first rinsing operation into a plurality of separate time segmented rinse discharge portions

(c) first channeling means for channeling each of said separate rinse discharge portions from said first valve means to a different one of said tanks in a sequential manner from the first to the last tank;

(d) second channeling means for channeling said rinse discharge portions out of said tanks;

(e) second valve means having a plurality of inlets and an outlet, each of said inlets communicating with one of said second channeling means, and said outlet communicating with said shower rinse;

(f) means for pumping said rinse discharge portions through said second channeling means and said second valve means to said shower rinse; and

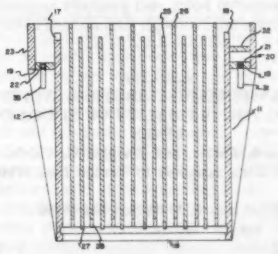


(g) control means for activating said pumping means and said second valve means in accordance with the operation of said first valve means such that said tanks are sequentially connected, from the first to the last tank, with said shower rinse in a feedback arrangement in subsequent rinsing operations so that said tanks have the concentration of contaminants in said rinse discharge therein increased in said subsequent rinsing operations.

4,269,209
SERIAL FLOW PHOTOGRAPHIC WASHER

Stephen C. Peterson, 3791 S. 1860 E., Salt Lake City, Utah 84106

Filed Jun. 30, 1980, Ser. No. 164,832
Int. Cl.³ B08B *3/04*; G03D *3/02*
U.S. Cl. 134—182 **10 Claims**



1. A unit for washing photographic prints comprising:

(a) a pair of interconnected vertical parallel sidewalls and endwalls surrounding and interconnecting a horizontal base defining an enclosed washing tank having an open top,

(b) an inlet manifold horizontally mounted along the upper portion of one sidewall containing water inlet means and situated to pass water over said sidewall into the washing tank,

(c) an efflux manifold horizontally mounted along the upper portion of the opposite sidewall containing water draining means and situated to receive water over said sidewall from said washing tank,

(d) a series of alternating parallel vertical equidistantly spaced underflow and overflow baffles attached to said washing tank between said endwalls and parallel to said sidewalls dividing said washing tank into multiple washing compartments, said baffles being arranged such that the baffles adjacent the sidewalls are underflow baffles said underflow baffles being attached to said endwalls

such that said baffles provide a flow space between the lower portion thereof and the horizontal base, said overflow baffles terminating at the upper portion thereof at a horizontal level below the level of the upper portion of the underflow baffles thereby providing for the serial flow of water from the intake manifold through each compartment and out the efflux manifold.

4,269,210

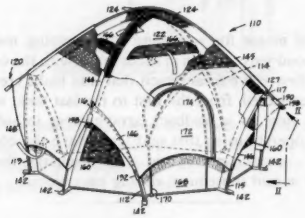
ARCH SUPPORTED TENT

George R. Marks, Richmond, Calif., assignor to Sierra Designs, Inc., Oakland, Calif.

Continuation-in-part of Ser. No. 872,630, Jan. 26, 1978, Pat. No. 4,165,757. This application Apr. 16, 1979, Ser. No. 30,357

Int. Cl.³ A45F *1/16*; E04B *1/347*

U.S. Cl. 135—1 R **3 Claims**



1. In combination with a tent having a flexible ridge member and a cover, the cover formed to receive said flexible ridge member in a fabric sleeve, extending from adjacent one edge to adjacent an opposite edge, said cover having grommeted holes formed at the one edge and the other opposite edge both in line with the fabric sleeve; a generally symmetric fitting having an enlarged center portion and formed to be received in said flexible ridge member and further adapted to partially pass into one of said grommeted holes, said generally symmetric fitting having a transverse bore through the enlarged center portion.

4,269,211

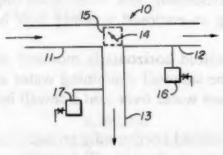
STEAM MANIFOLD DISTRIBUTION SYSTEM FOR PROVIDING EQUAL QUALITY OF STEAM IN TWO LINES

Curtis E. Howard, Porter, and Douglas G. Calvin, Missouri City, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Feb. 5, 1979, Ser. No. 9,196

Int. Cl.³ G05D *11/02, 11/08*

U.S. Cl. 137—2 **15 Claims**



1. A method for equalizing the steam quality in two branch lines of a high pressure steam pipe tee joint with a perforated baffle plate rotatably pivoted in said tee joint comprising the steps of;

(a) dividing the flow of the steam entering the tee joint into said two branch lines,

(b) determining the steam quality in each branch line, and,

(c) rotating said baffle plate in accordance with the determined steam quality in each branch line.

4,269,212

PROCEDURE AND APPARATUS FOR MANIPULATING BATCHES OF LIQUIDS

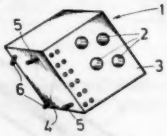
Niilo Kaartinen, Vuolahti, 21620 Kuusisto, Finland

Filed Apr. 9, 1979, Ser. No. 28,510

Claims priority, application Finland, Apr. 10, 1978, 781090; Sep. 14, 1978, 782829

Int. Cl.³ F17D *1/18*

U.S. Cl. 137—13 **12 Claims**



1. An apparatus for the treatment of batches of liquid comprising: a number of storage or treatment chambers, and a network of conduits associated therewith, wherein: said chambers are placed within said network enabling the conduits to provide connections between the chambers and each connection between two chambers comprises at least one valve point communicating with a refrigerator and being formed with a conduit subject to being frozen shut by means of liquid, and said apparatus being further provided with an electrically controllable heating element, whereby the valve is caused to open by raising its temperature to a level higher than the freezing point of the liquid.

9. A process for the treatment of batches of liquid by means of an apparatus constituted by a number of chambers and a network of conduits, the chambers being placed within said network whereby said conduits provide connections between the chambers and each respective connection between two chambers has at least one section connected with a refrigerator and provided with an electrically controllable heating element, each of said respective sections having the function of a regulatable valve, and said process comprises the steps of:

introducing a batch of liquid into a part of said apparatus;

transferring said batch into a selected chamber by regulating the temperature of the valves in the conduits along which the batch is to travel at a level above the freezing point of the liquid and by moving the batch through said conduits into said chamber by means of a pressure difference;

holding the batch in said chamber for storage or treatment by closing at least one of the valves in the conduits in communication with said chamber by means of liquid freezing after the heating element in the valve has been switched off; and

removing said batch from the chamber after the storage or treatment by regulating the temperature of the valves in the conduits along which the batch is to be removed, above the freezing point of the liquid and applying a pressure difference into said conduits.

4,269,213

SAFETY VALVE

Michiaki Sasaki, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 6, 1979, Ser. No. 46,096

Claims priority, application Japan, Aug. 8, 1978, 53-113051[U]

Int. Cl.³ F16K *17/36*

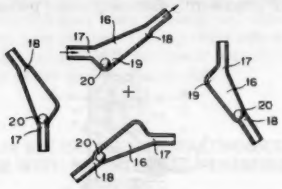
U.S. Cl. 137—38 **6 Claims**

1. An apparatus for interrupting fluid flow therethrough when tilted a predetermined amount from a normal position, said apparatus comprising:

(a) a housing having a valve chamber with a substantially triangular cross section, said housing having an inlet, an outlet and a recess positioned at the respective apexes of said chamber; and

(b) a ball positioned within said chamber and freely movable therein,

wherein said ball remains located essentially within said chamber recess when said apparatus is in its normal position, and wherein said ball relocates against said inlet to block further



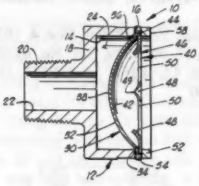
fluid flow therethrough when said apparatus is tilted a predetermined amount in one direction from the normal position, and wherein said ball relocates against said outlet to block further fluid flow therethrough when said apparatus is tilted a predetermined amount in another direction from the normal position.

4,269,214

SAFETY PRESSURE RELIEF DEVICE

Calvin C. Forsythe, Tulsa; John L. Strelow, and Miner E. Clift, both of Broken Arrow, all of Okla., assignors to BS & B Safety Systems, Inc., Tulsa, Okla.

Filed Jan. 19, 1979, Ser. No. 4,809
Int. Cl.³ F16K *17/14, 17/40*
U.S. Cl. 137—68 R **10 Claims**



1. A safety pressure relief device for permitting excess pressure to escape from a pressure vessel, said device comprising:

a reverse buckling rupture disk having a concave-convex portion and a radially outer flange portion joined by a curved transition connection;

a casing including:

a first end portion;

a second end portion;

a wall disposed adjacent said second end portion so that an inner cavity is defined within said casing between said first and said second end portions, said radially outer flange of said rupture disk engaging said first end portion with a convex side of said rupture disk adjacent said casing so that said concave-convex portion projects into said inner cavity; and

connecting means projecting axially outward from said wall for engaging the pressure vessel, said connecting means having an axial bore disposed therethrough communicating with said inner cavity so that the pressure in the pressure vessel is communicated to said rupture disk; and

knife means positioned adjacent a concave side of said rupture disk, said knife means including:

a radially outer flange portion supporting said curved transition connection of said rupture disk;

a radially inner opening disposed in said knife means;

first cutting means projecting radially inward into said opening from said outer flange portion of said knife means, said first cutting means including a first substantially triangular shaped tooth;

second cutting means projecting radially inward into said opening from said outer flange portion of said knife means, said second cutting means including a second substantially triangular shaped tooth spaced from said first substantially triangular shaped tooth; and

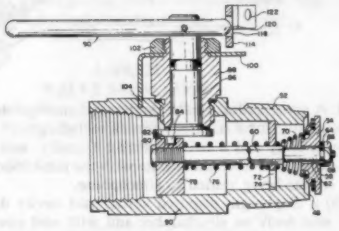
first and second non-cutting portions, each of said non-cutting portions partially defining said inner opening, said first cutting means being located between said first and second non-cutting portions so that upon reversal of said rupture disk in response to excess pressure in the pressure vessel said first and second cutting means puncture said rupture disk thereby permitting excess pressure to escape from the vessel.

4,269,215

VAPOR FLOW CONTROL VALVE

Larry F. Odar, Northbrook, Ill., assignor to Rego Company, Chicago, Ill.

Filed Oct. 25, 1978, Ser. No. 954,525
Int. Cl.³ F10K *17/28*
U.S. Cl. 137—75 **1 Claim**



1. In a liquified petroleum gas system, a fluid excess flow check valve comprising a valve body defining a flow compartment and an outwardly facing valve seat; a valve stem reciprocably supported in the valve body and having a first end thereof extending through said valve seat; a valve member slidably supported on the first end of the valve stem for cooperation with said valve seat; a terminal stop element on the first end of said valve stem positioned outwardly of said valve member to engage said valve member and limit movement thereof relative to said valve stem; first biasing means extending between said valve member and said valve body to bias said valve member outwardly from said valve seat against said terminal stop element; second biasing means extending between said valve member and a second end of said valve stem to bias the second end of said valve stem away from said valve seat; a handle external to said valve body which is movable between closed and excess flow responsive open positions, a shaft mounted for rotation on said valve body to rotate between a closed and an excess flow responsive open position for said valve member, the central axis of said shaft being substantially aligned with and perpendicular to the central longitudinal axis of the valve stem, a crank pin projecting from the shaft at the innermost end thereof, said crank pin being offset laterally from the central longitudinal axis of said shaft, and yoke means formed on the second end of said valve stem, said yoke means being provided with a slot which receives said crank pin; said crank pin being substantially aligned with the central longitudinal axis of said valve stem when said valve means is in the closed position and offset laterally from the central longitudinal axis when said shaft is rotated away from the closed position and toward the excess flow responsive open position; and a latch member releasably engaging said handle in the excess flow responsive open position, said latch member pivotally supported by an arm pivotally mounted on a bracket

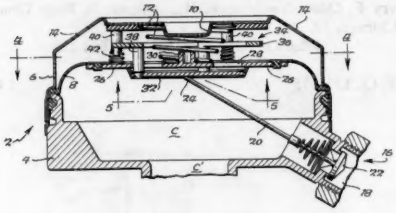
secured to said valve body, said arm being joined to said latch member by heat responsive means operative to cause said latch member to release said handle when subjected to a temperature in excess of a predetermined temperature, said arm further including pivoted locking bar means to releasably engage said handle in the excess flow responsive open position and actuating means secured to said locking bar and operable to pivot said locking bar on said arm to release said handle.

4,269,216

PRESSURE DEMAND VALVE SYSTEM

John L. Sullivan, Fort Erie, Canada; Eugene A. Georgini, Cheektowaga, and Milo R. Simmonds, Williamsville, both of N.Y., assignors to A-T-O Inc., Willoughby, Ohio

Filed Jul. 19, 1978, Ser. No. 926,005
Int. Cl.[3] A62B *7/04*
U.S. Cl. 137—102 **9 Claims**



1. A combination inhalation demand air regulator and exhalation valve for a respiration mask including:

(a) a body and a cover defining a cavity, said body being apertured to communicate with the mask interior and said cover being vented to atmosphere,

(b) a diaphragm disposed across said cavity defining with said body an air chamber and with said cover an atmosphere chamber, said diaphragm being movable inwardly relative to a neutral position during inhalation and outwardly relative to said neutral position during exhalation, said diaphragm having a portion including at least one aperture for effecting communication between said air chamber and said atmosphere chamber,

(c) means responsive to the position of said diaphragm inward of said neutral position to regulate air flow from a supply line into said air chamber, and

(d) means responsive to the position of said diaphragm outward of said neutral position to effect communication through said diaphragm aperture to said air chamber with said atmosphere chamber to exhaust said air chamber to atmosphere comprising a valve seat, means for holding said valve seat on said diaphragm in a manner permitting said valve seat to close said diaphragm aperture and permitting independent relative movement between said diaphragm and valve seat during exhalation and means for limiting movement of said valve seat relative to said diaphragm whereby during exhalation, said valve seat and diaphragm are moved together with said valve seat closing said diaphragm aperture to a point where further movement of said valve seat is prevented and said diaphragm is moved away from said valve seat to open said aperture to exhaust said air chamber to atmosphere.

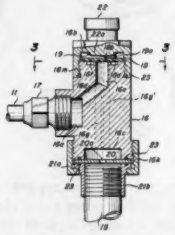
4,269,217

SEPARATOR VALVE

James P. Flanagan, P.O. Box 245, and Jack L. Carter, P.O. Box 464, both of Hooker, Okla. 73945

Filed Oct. 1, 1979, Ser. No. 80,223
Int. Cl.[3] F16T *1/00*
U.S. Cl. 137—183 **5 Claims**

1. In natural gas field operations, a valve for separating out liquid from the gas comprising in combination a body portion with inlet chamber, head chamber and outlet chamber, said valve including a passage of smaller dimension extending upwardly from said inlet chamber to said head chamber; a plurality of unobstructed downwardly-extending outlet passages from said head chamber to said outlet chamber; a circumferential groove about said inlet passage, communicating with said plurality of downwardly-extending outlet passages; a floating



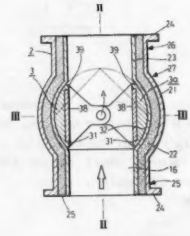
disc positioned within said head chamber for sealing off communication between said upwardly-extending passage and said circumferential groove, said disc being smaller than chamber and having a radial groove and at least one circumferential groove on the underside of the same; a spring seated within said head chamber and acting downwardly and eccentrically on said disc; and an outlet fitting with restricted orifice therein communicating with said outlet chamber.

4,269,218

ROTARY VALVE

Hisashi Sudo, Neyagawa, Japan, assignor to Kubota Ltd., Osaka, Japan

Continuation of Ser. No. 848,769, Nov. 4, 1977. This application Jul. 30, 1979, Ser. No. 62,051
Int. Cl.[3] F16K *5/04*; F16L *58/08*
U.S. Cl. 137—240 **2 Claims**



1. A rotary valve, including a valve case having a fluid passage and a valve element disposed in the fluid passage and operative to control the degree of opening of the passage, comprising:

side walls removably attached to the valve case, a pair of valve plates turnably disposed on the opposite sides of the fluid passage in opposed relation to each other and constituting the valve element, each of the valve plates being provided at its opposite ends with support arms extending toward the fluid passage, and drive means mounted on an outer side of the valve case and coupled to the valve plates for causing the valve plates to perform a symmetric circular motion, said drive means comprising a pair of rotary shafts, each of said rotary shafts being formed with a channel extending centrally therethrough and having one end open to a boss of a respective rotatably and slidably supported arm and the other end open to a peripheral surface of the shaft outside the wall, the outer opening

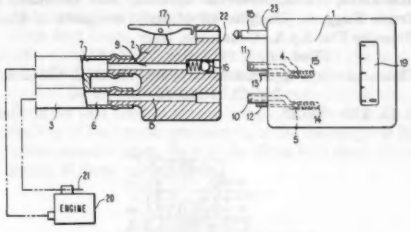
being covered with closing means communicating with one of a pressure air source or steam source, said shafts being rotatably supported on a valve case, side walls extending coaxially toward the fluid passage at right angles to the center axis of the fluid passage, one support arm of each valve plate being coupled to an outer portion of a respective one of the drive shafts and the other support arm of each valve plate being rotatably and slidably supported on an inner portion of the opposing rotary shaft of the other side respectively side-by-side with the coupled support arm of the opposing valve plate.

4,269,219

FITTINGS FOR RELEASABLY INTERCONNECTING A FUEL TANK WITH AN INTERNAL COMBUSTION ENGINE

Helge Dybvig, Strömsdalen 22, 4600 Kristiansand S, Norway

Filed Apr. 11, 1979, Ser. No. 28,992
Claims priority, application Norway, Apr. 17, 1978, 781326
Int. Cl.³ F16L *37/28*
U.S. Cl. 137—322 **1 Claim**



1. In a coupling for releasably interconnecting a fuel tank with an internal combustion engine, comprising a hose fitting having a fuel passage opening into an end wall of said fitting, hose means on said fitting including a fuel conduit in communication with said fuel passage for connection with the engine, an air and fuel valve fitting having air vent and fuel passages respectively communicating with air and fuel within the tank, spring biased valves in said fuel passage and in said air vent passage of said air and fuel valve fitting, a depressible fuel valve stem and a depressible air vent valve stem respectively on said valves of said fuel and air valve fitting extending outwardly thereof, said valves being unseated respectively by said stems upon a coupling together of said fittings, the improvement wherein said hose fitting is provided with an air vent passage opening into said end wall, said hose means including an air vent conduit terminating at a location remote from said fittings, an air vent nipple extending from one of said fittings as an extension of said air passage thereof, said air vent nipple extending into the air vent passage of the other fitting upon a coupling together of said fittings, said air vent valve stem extending from said air and fuel valve fitting a greater distance than the extent of said fuel valve stem therefrom for opening said air vent passages earlier than said fuel passages upon the coupling together of said fittings, whereby any elevated pressure within the tank is vented prior to the opening of said fuel passages, such pressure being vented through both said fittings and through said air vent conduit to thereby avoid any escape of fuel gas from the tank into the immediate vicinity thereof.

4,269,220

TANK VALVE MOUNTING ARRANGEMENT

Richard E. Rehbein, Valparaiso, Ind., assignor to Pullman Incorporated, Chicago, Ill.

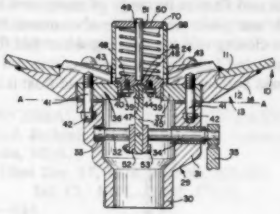
Filed Sep. 12, 1979, Ser. No. 74,584
Int. Cl.³ F16K *27/03*
U.S. Cl. 137—350 **11 Claims**

1. In a lading valve assembly for a tank car having a shell with a bottom cut-out opening, the improvement of a valve mounting arrangement comprising:

a valve mounting flange member having a one-piece body including vertical opening means,

said body including an outer portion disposed over and closing said cut-out opening,

means connecting said body to said tank shell to seal said cut-out opening,



said outer portion having an outer surface tapering downwardly from said shell and inwardly toward said vertical opening means, and

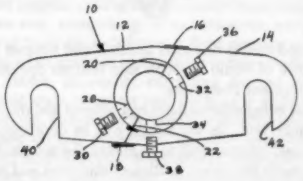
said body having a raised portion extending into said shell with radial tunnel means therein communicating with the tank and said vertical opening means.

4,269,221

VALVE STEM LOCK

Harold R. Adams, Rte. 1, St. Francisville, Ill. 62460

Filed Aug. 1, 1979, Ser. No. 62,710
Int. Cl.³ F16K *35/00*
U.S. Cl. 137—383 **7 Claims**



1. A valve stem lock for use with valves having an exposed valve stem situated between a pair of elongated yoke elements, said device comprising a member having a pair of rigid hinged sections having semi-circular valve stem engaging means, said sections being pivotally movable about a first axis from an open position to a closed position surrounding said valve stem, said valve stem engaging means having a second axis parallel to and spaced axially from said first axis, said member being provided with a plurality of radially moveable locking means mounted in semi-circular hub portions provided on each of said hinged sections coaxially with said second axis adapted to engage the valve stem in binding relation and means for engaging said member with the yoke elements, said sections being provided with arcuate slots receivable in said yoke elements and means provided for locking said sections together in the valve stem surrounding position.

4,269,222

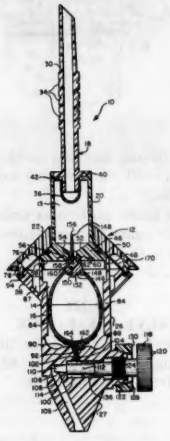
CONSTANT FLOW DEVICE

Yoram Palti, 51 Ruth St., Haifa, Israel

Filed Mar. 27, 1979, Ser. No. 24,389
Int. Cl.³ F16K *21/18, 31/18*
U.S. Cl. 137—391 **13 Claims**

1. In a device for regulating the flow of liquid through a liquid line communicating with a reservoir disposed thereabove, said device being of the type comprising: walls defining

a closed chamber having a top wall, a bottom wall spaced below said top wall, and a side wall extending between said top and bottom walls, said top wall defining an opening for introducing liquid from said reservoir to said chamber and said bottom wall defining an opening for discharging liquid therefrom; a float disposed in said chamber for vertical movement therein between an upper position and a lower position; said walls having an air vent in the upper portion thereof in spaced relation with said float in its range of movement between said upper and lower positions; upper valve means connected to said float for closing said top opening when said float is in said upper position and lower valve means connected to said float for closing said bottom opening when said float is in said lower



position; and means disposed beneath said bottom for regulating the flow of liquid through said bottom opening; wherein the improvement comprises:

said float being substantially egg-shaped and disposed in said chamber with its thickened end in confronting relation with said bottom wall to minimize the accumulation of air bubbles on the lower portion of said float and its narrowed end in confronting relation with said top wall to minimize the accumulation of liquid on the upper portion of said float; and

said upper valve means being configured to minimize the accumulation of liquid thereon and said lower valve means being configured to minimize the accumulation of air bubble thereon.

4,269,223

RESETTABLE PNEUMATIC OVERRUN CONTROL VALVE

Raymond D. Carter, Bryan, and Allen L. Clark, Pioneer, both of Ohio, assignors to The Aro Corporation, Bryan, Ohio

Filed Apr. 14, 1980, Ser. No. 139,852

Int. Cl.[3] F16K *17/00*

U.S. Cl. 137—460 **10 Claims**

1. An improved resettable pneumatic overrun control valve comprising, in combination:

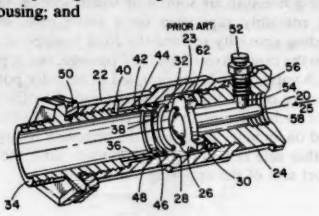
an air line housing having a throughbore with an inlet and an outlet;

a seat in the throughbore upstream from the outlet;

a valve member for closing the throughbore by cooperative engagement with the seat when translated toward the outlet, said valve member including a stem projecting in the throughbore;

biasing means intermediate the valve member and the housing for biasing the valve member toward the inlet;

means for adjusting the biasing force on the valve member in the housing; and



means projecting through the housing for engaging the stem to pivot the valve member from the seat and breaking the seal of the valve member on the seat.

4,269,224

COMBINED FLUID LOGIC CONTROL DEVICE

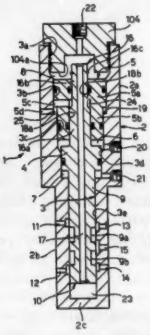
Giulio Dotti, Turin; Antonino Bertone, Sant'Antonino, and Bruno Roggero, Cinaglio, all of Italy, assignors to Centro Ricerche Fiat S.p.A., Orbassano, Italy

Filed Jul. 3, 1979, Ser. No. 54,512

Claims priority, application Italy, Jul. 12, 1978, 68646 A/78

Int. Cl.[3] F15B *13/06*

U.S. Cl. 137—596.15 **10 Claims**



1. In a fluid control device for the selective control of at least one group of three movable members each displaceable between a first working position and a second working position, and each having a rest position intermediate between the first and second working positions, the improvement wherein:

(a) said fluid control device comprises, for each group of three movable members, a group of three control units, each control unit being intended to control a respective movable member,

(b) each control unit comprises a fixed body provided internally with a cylindrical cavity closed at its ends, a first piston element rigidly connected with the movable member controlled by the said control unit and a second piston element; the said two piston elements being slidably mounted within the cavity of the fixed body in such a way as to define three principal chambers within the said cavity;

a first principal chamber lying between the two piston elements,

a second principal chamber adjacent only the first piston element, and

a third principal chamber adjacent only the second piston element;

each control unit being moreover provided with a first, a second and a third feed inlet, respectively communicat-

ing with the first, the second and the third principal chamber to provide seven different feed conditions,

(c) the two piston elements of each control unit are formed in such a way that each control unit controls, in a first active operating condition. corresponding to one of said seven different feed conditions of fluid under pressure to one or more of the three feed inlets, a displacement of the respective movable member towards its first working position, and, in a second active operating condition, corresponding to another of said seven different feed conditions, a displacement of the respective movable member towards its second working position; each hydraulic control unit being operable to maintain the respective movable member in its rest position in the passive operating conditions corresponding to the other five different feed conditions of fluid under pressure to the three feed inlets,

(d) each group of three control units is provided with a first, a second and a third feed duct, each of which is connected both to the first feed inlet of one of the three units of the group of three and to the second feed inlet of another unit of the group of three and to the third feed inlet of the remaining unit of the group of three; each feed inlet of each control unit being connected only to one of the said three feed ducts,

(e) there are provided control means to control the feeding of a fluid under pressure coming from a feed source to each of the three feed ducts of each group of three control units the said control means being operable to allow the feeding of fluid under pressure to, or the discharge of fluid under pressure from, each of the three feed ducts of each group of three control units.

4,269,225

SAFETY VALVE ASSEMBLY

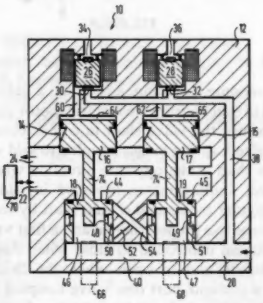
Erich Ruchser, Kernen, and Helmut Ott, Stuttgart, both of Fed. Rep. of Germany, assignors to Technomatic AG, Aesch/Luzern, Switzerland

Filed Dec. 14, 1978, Ser. No. 969,482

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1977, 2756240; Mar. 16, 1978, 2811374

Int. Cl.³ F15B *13/043, 20/00*

U.S. Cl. 137—596.16 **14 Claims**



1. A safety valve assembly for pressurized-medium operated devices, particularly for use in clutch and brake arrangements of presses, comprising a housing having a supply inlet, a consumer outlet and a return outlet, said housing being formed with two separate chambers defining two first valve seats and two crosswise positioned non-intersecting passages for connecting said chambers to each other, each of said chambers having a supply side and a discharge side, each of said intersecting passages extending from the supply side of one chamber to the discharge side of the other chamber to a point located upstream of a respective one of said first valve seats; two valves operating in parallel with one another and each having a working piston and a valve member connected thereto, said valve members being guided within said chambers up to said first valve seats and each formed with a central recess, each of said recesses being associated with said supply inlet and operatively connected with respective ones of said non-intersecting passages, each of said valve members further including an annular passage and a transverse bore connected to each other and arranged to operatively communicate each of said central recesses with respective ones of said non-intersecting passages; and means for controlling the operation of said valves to thereby establish or interrupt the communication between said inlet and said outlets selectively.

4,269,226

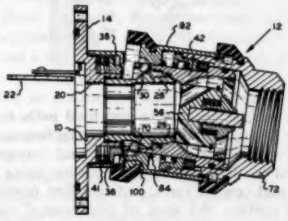
UNIVERSAL BREAKAWAY COUPLING

Alan R. Allread, Jackson, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Dec. 17, 1979, Ser. No. 104,659

Int. Cl.³ F16L *37/28, 37/18*

U.S. Cl. 137—614 **11 Claims**



1. A breakaway fluid coupling characterized by its ability to operate under angular misalignment conditions in all directions relative to an axis, comprising, in combination, male and female coupling parts each defining a fluid passage coincident with said axis when coupled and each including conduit system attachment means, an axially extending annular projection defined on said male coupling part defining a portion of said male part passage, an exterior spherical sealing surface concentrically defined on said projection, an inner spherical surface recess defined in said female coupling part sealingly receiving said projection spherical surface permitting pivoting of said coupling parts relative to each other, connectable first and second locking means defined upon one of said coupling parts, one of said locking means being shiftable upon said one of said parts between locking and release positions, the other of said locking means comprising a plurality of detents radially movable upon their associated part between locking and release positions as determined by the position of said the other locking means, and operating means defined upon one of said parts shifting said one locking means from its locking position to its release position upon the axial misalignment of said coupling parts due to relative pivoting exceeding a predetermined angular extent.

4,269,227

VALVE APPARATUS

Tatsuo Araki, Tokyo; Yasuo Okamoto; Fumio Ohtomo, both of Yokohama, and Hiroto Atsumi, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 14, 1978, Ser. No. 969,700

Claims priority, application Japan, Dec. 21, 1977, 52-152858

Int. Cl.³ F16K *1/12*

U.S. Cl. 137—630.14 **4 Claims**

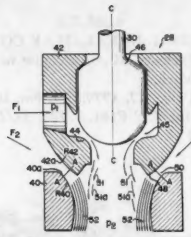
1. A valve apparatus comprising:

a valve housing having a fluid path therein;

a main valve seat provided at an intermediate position of said fluid path and having a circular through hole in which an inner curvilinear line obtained when the inner circumfer-

ential curved surface of the seat defining said through hole is cut at a longitudinal cross-section including the central axis of said through hole, is convex toward said central axis and has an arcuate curvilinear line portion with a radius;

a main valve body having a valve seat side adapted to be moved forwardly along said central axis relative to said main valve seat and into contact with the seat to close said fluid path and having a first portion formed at the forward end portion of the valve seat side of the valve body such that it is coaxial with said through hole, said first portion being entirely comprised by a convex, outer peripheral



curved surface for closing said fluid path, and a second portion having a conical surface at that forward portion of the valve seat side merging with said convex surface of said first portion, a sharp edge portion being formed between said convex surface of said first portion and said second portion, the apex of said conical surface being rearward of said sharp edge, in which an outer peripheral curvilinear line of said first portion obtained when said first portion is cut at said longitudinal cross-section has an arcuately curved line with a radius smaller than that of said valve seat; and

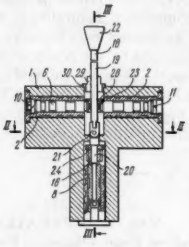
means for moving said main valve body into engagement, and out of engagement with said main valve seat.

4,269,228

DEVICE FOR CONTROLLING HYDRAULIC MOTORS

Viktor M. Salomatin, Kastanaevskaya ulitsa, 44, kv. 58, Moscow, U.S.S.R.

Filed Oct. 24, 1978, Ser. No. 954,211
Int. Cl.[3] F16K *11/18*; G05G *9/00*
U.S. Cl. 137—636 **1 Claim**



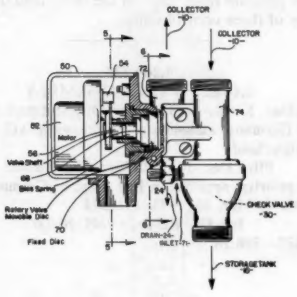
1. A device for controlling hydraulic motors, comprising: a housing; a plurality of distributors disposed in said housing, said distributors being substantially formed as spring-opposed hydraulic directional control spool valves; an actuating member means to shift said spool valves; said actuating member means being disposed in said housing and defined by two articulately interlinked levers pivotal with respect to each other, reciprocatingly mounted and rotatably disposed around their own longitudinal axis; said control spool valves including first and second spool valves, said first and second spool valves respectively provided with gear racks, one of said racks attached to said first spool valve and including a pinion disposed between said racks and one of said spool valves arranged coaxially while the other spool valve is substantially in parallelism with the longitudinal axis of said levers; reciprocation of said levers reciprocating said first and second spool valves relative to said housing at least two other spool valves referred to as the third and fourth spool valves, said third and fourth spool valves being disposed at an angle with the longitudinal axis of said levers; one of said levers being provided with a knob and a ring which is adapted to interact with said third spool valve to reciprocate said third spool valve when said levers are pivoted with respect to each other, whereas, the other lever is connected to said first spool valve and has a pinion associated therewith, said pinion including eccentrically mounted shaft means connected with said fourth spool valve such that rotation of said levers reciprocates said fourth spool valve.

4,269,229

SOLAR HEAT SYSTEM

Myrl J. Saarem; Donald E. Lovelace; Dale C. Firebaugh, and Dale F. Soukup, all of Carson City, Nev., assignors to Richdel, Inc., Carson City, Nev.

Division of Ser. No. 864,719, Dec. 27, 1977, Pat. No. 4,191,166.
This application Mar. 19, 1979, Ser. No. 22,226
Int. Cl.[3] F16K *11/14*
U.S. Cl. 137—869 **2 Claims**



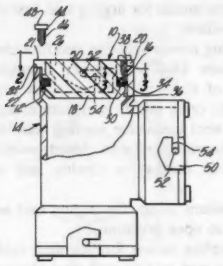
1. A valve module including: a housing; a valve shaft rotatably mounted in said housing; an electric motor coupled to said valve shaft to turn the valve shaft in one direction when the motor is energized; spring means coupled to said valve shaft to turn the valve shaft in the opposite direction when the motor is de-energized; limiting means mounted in said housing for limiting the angular movement of said shaft by said motor and said spring means to a predetermined arc; a first valve mounted in said module and controlled to close when fluid pressure is introduced thereto and to open when the fluid pressure is relieved; and a multiple-port disc valve coupled to said valve shaft to be opened and closed by rotation of said valve shaft through said arc, said disc valve comprising a fixed disc mounted in said housing having a plurality of ports therein, including a drain port, a pressure port, a pair of valve ports, and a further port coupled to said first valve, and a rotary disc mounted in said housing on said valve shaft in facing coaxial engagement with said fixed valve and having first and second passages formed on the surface thereof adjacent to said fixed disc for interconnecting the valve ports to the drain port and the pressure port to said further port when the rotary disc is in a first angular position, and for interconnecting said further port to said drain port and for closing said valve ports and said pressure port in the fixed disc when the rotary disc is turned through said arc to a second angular position.

4,269,230

CLOSURE MEMBER

Kenneth V. Pepper, Davison, Mich., assignor to Genova, Inc., Davison, Mich.

Filed Feb. 26, 1979, Ser. No. 15,332
Int. Cl.[3] F16L 55/10
U.S. Cl. 138—89 8 Claims



1. In combination with a tubular plastic pipe having an open axial end with a non-threaded, continuously smooth cylindrical, inner peripheral wall, a plastic closure member for closing the open end of the pipe, said closure member comprising:

a body, said body having a part insertable into the interior of the pipe, the outer periphery of the insertable part having a non-threaded surface area spaced inwardly from the interior of the pipe at least along a portion of the outer periphery of the body insertable part and axially for at least a predetermined distance, wherein said inwardly spaced area is an axially extending channel formed along said outer periphery; and

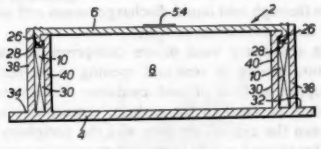
at least one externally threaded member, said threaded member being threadably received between said inwardly spaced surface area and the inner periphery of said pipe, said threaded member being dimensionsed so that its external threads at least partially embed in both said pipe and said body insertable part of said closure member to thereby secure said closure member to said pipe.

4,269,231

BELOW SURFACE DUCTING

George T. Happer, London, England, assignor to Happer Systems Limited, London, England

Filed Jul. 23, 1979, Ser. No. 59,612
Claims priority, application United Kingdom, Jul. 28, 1978, 31520/78
Int. Cl.[3] F16L 55/10
U.S. Cl. 138—92 9 Claims



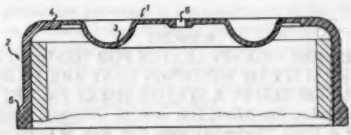
1. Ducting for installing below a surface, which ducting comprises a body portion and a lid, the body portion having a first longitudinal channel, a pair of second longitudinal channels arranged one on each side of the first channel, and at least two separate channel insert members which are a removable fit in the first channel and which are for receiving elongate members, the lid having retainer means for clipping in the second channels, each channel insert member having base and side walls, and the channel members occupying substantially the entire cross-sectional area of the first channel.

4,269,232

PROTECTIVE CAP FOR PIPES

Fritz Witschi, Biel, Switzerland, assignor to Von Roll AG, Switzerland

Filed Mar. 7, 1979, Ser. No. 18,426
Claims priority, application Switzerland, Apr. 10, 1978, 3837/78
Int. Cl.[3] B65D 59/06; F16L 55/10
U.S. Cl. 138—96 R 5 Claims



1. In a protective cap which fits over an end of a section of pipe having a generally cylindrical wall portion and a floor portion fixed at and closing one end of said wall portion to define a cup shape therewith, the improvement comprising

said wall portion having a greater thickness then said floor portion and a rim remote from said floor portion;

means for increasing the retaining force of said wall portion comprising an endless circumferential retaining bead at said rim; and

expansion means formed in said floor portion for permitting radial expansion of said floor portion, said expansion means comprising an annular depression of generally semi-circular cross section, said depression being centrally located in said floor portion and concentric with said wall portion and extending from said floor portion in the same direction as said wall portion.

4,269,233

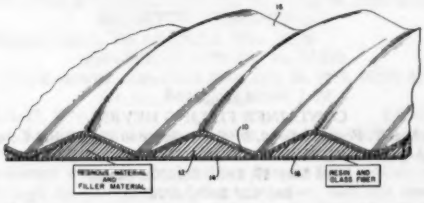
Patent Not Issued For This Number

4,269,234

HIGH STRENGTH PIPE

Doyle F. Johnson, Lawrenceville, and Nelson F. Goetz, Atlanta, both of Ga., assignors to Tri State Culvert Corporation, Clearwater, Fla.

Filed May 18, 1979, Ser. No. 40,116
Int. Cl.[3] F16L 11/14
U.S. Cl. 138—121 6 Claims



1. A high strength pipe comprising a corrugated tube of metal defining a series of annular troughs therewithin, a resin-

ous material forming an inner layer on the inner pipe surface and substantially filling said annular troughs, and a top layer of resinous material containing glass fiber and lining the interior of said pipe to form a substantially cylindrical inner surface.

4,269,235

METHOD AND APPARATUS FOR WINDING A PLURALITY OF WINDINGS THAT ARE TO BE COLLECTED IN A STATOR SHEET PACKET

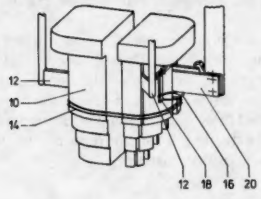
Willi Muskulus, Frankfurt, Fed. Rep. of Germany, assignor to Balzer & Dröll, Niederdorfelden, Fed. Rep. of Germany

Filed Feb. 23, 1979, Ser. No. 14,545

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2808050

Int. Cl.[3] **H02F** *15/04*

U.S. Cl. 140—92.1 **15 Claims**



1. In a method of sequentially winding a plurality of windings on a winding form and for transferring the windings sequentially from the winding form to a collecting tool such that the plurality of windings are disposed on the collecting tool for subsequent collection axially through an aperture of a stator sheet packet positioned in adjacency with said collecting tool, the windings being disposed on the collecting tool such that portions thereof are positioned within a peripheral region which is drawn through the stator aperture during collection, the improvement wherein, during the transition from winding one winding on the form and winding the next winding on the form, the winding wire is held clamped, while said one winding is on said form, at a point within said peripheral region of the windings disposed on the collecting tool which is to be drawn through said aperture during subsequent collection.

4,269,236

CONTAINER FILLING DEVICE

Michael T. Fogg, Holland, Mich., assignor to Fogg Filler Company, Holland, Mich.

Filed May 17, 1979, Ser. No. 40,068

Int. Cl.[3] **B67C** *3/26*

U.S. Cl. 141—293 **19 Claims**

1. In a container filling device which comprises

(a) a container closure member;

(b) a filling head projecting downwardly axially through said closure member and having a liquid discharge means for discharging liquid into said container and primary vent means for venting gas from the head space of said container as it is being filled;

(c) first closure means for closing said filling head and simultaneously closing both said liquid discharge means and said primary vent means;

(d) first resilient means for urging said first closure means to a closed position;

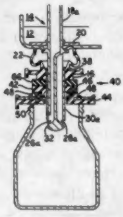
(e) first coupling means between said first closure means and said container closure member operative on upward movement of the latter to compress said first resilient means and to open said first closure means;

(f) secondary vent means for venting said head space when said first closure means is in closed position;

(g) second vent means for closing said secondary vent means;

(h) second resilient means for urging said second vent closure means to open position;

(i) second coupling means for coupling said container closure member and said second vent closure means operative on movement of said container closure member upward to compress said second resilient means and to close said secondary vent means;



(j) said container closure member being an annulus having a sealing surface on its under surface which is adapted to engage the mouth of the container during the filling operation, so that the only access to the interior of said container is through said liquid discharge means and said vent means; the combination in which,

(1) said secondary vent means comprises at least one aperture having its vent end opening in the portion of the upper surface of said container closure member which is exposed to the ambient atmosphere and lies between the central opening and the periphery of the annulus thereof and its inner end opening in a surface of said annular member which is exposed to the atmosphere confined in the head space of the container;

(2) said second vent closure means comprises a second annular member surrounding said filling head and spaced above said first annular member and held away therefrom by said second resilient means except when the latter is compressed;

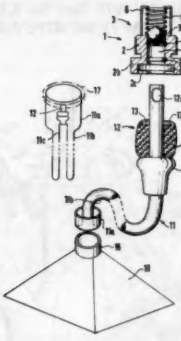
(3) and said annular members have an island of surface-to-surface contact surrounding each said vent end opening.

4,269,237

SUMP OIL DRAINING AND COLLECTING DEVICE

Jürgen Berger, Rheingaustr. 115, 6200 Wiesbaden, Fed. Rep. of Germany

Filed Dec. 7, 1978, Ser. No. 967,435
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1977, 2754348
Int. Cl.[3] B65B *3/04*
U.S. Cl. 141—346 17 Claims



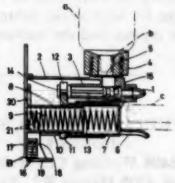
1. A device for draining and collecting oil from a motor vehicle oil sump, comprising:
- a drain plug having a body provided with an oil outlet passage;
- an oil collecting vessel,
- a drain hose,
- a drain spigot attached to one end of the hose and engageable in the oil outlet passage,
- means for sealing the spigot to said body upon its insertion therein;
- means for releasably locking the spigot to the body in a position in which the spigot is engaged in said passage, and
- means closing said outlet passage, said closure means being engageable by the spigot to open said passage upon insertion of the spigot therein.

4,269,238

TOOTHPASTE EXTRUDER CAPABLE OF CONTROLLING THE SUPPLY AMOUNT

Masahiro Iwamoto, 358 Hiraoka-cho, Sakai-shi Osaka-fu, Japan

Filed Jul. 30, 1979, Ser. No. 61,756
Claims priority, application Japan, Apr. 24, 1979, 54-55539[U]
Int. Cl.[3] B65B *3/12*
U.S. Cl. 141—362 3 Claims



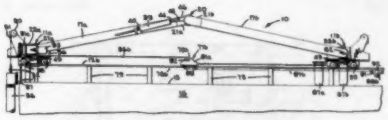
1. A toothpaste extruder capable of controlling the amount of supply comprising:
- (a) a bill-shaped extrusion port made of rubber which is provided on one end of the housing and normally sustained in a blocked state;
- (b) a suction valve through which a cylinder integrally formed with the housing communicates with a tube receiver for supporting the neck of a toothpaste tube;
- (c) an L-shaped toothbrush receiver abutting the forward end of a toothbrush and supporting the backside of the part of the toothbrush where bristles are planted, said toothbrush receiver having a slide tube formed on the backside thereof;
- (d) a guide tube secured to the housing so as to slidably fit into the slide tube of the toothbrush receiver;
- (e) an expansion spring provided in the slide tube and the guide tube;
- (f) a projection provided in the lower part of the slide tube so as to control the restitution position thereof by engaging with a slide hole formed in the bottom of the housing;
- (g) flanges of the slide tube secured to one end of the piston rod so that the slide tube and the piston in the cylinder cooperate with each other; and
- (h) a slide controller for controlling the intrusion length of the toothbrush receiver.

4,269,239

TRAVELING LOADING ARM FOR MARINE TANKERS

Frank P. Haley, Upland, Calif., assignor to FMC Corporation, San Jose, Calif.

Continuation of Ser. No. 950,190, Oct. 10, 1978, abandoned.
This application Jun. 15, 1979, Ser. No. 48,915
Int. Cl.[3] B65B *3/04;* F17D *1/00*
U.S. Cl. 141—387 14 Claims



1. A traveling loading arm for mounting on the deck of a marine tanker for connecting a petroleum transfer hose to manifold ports mounted on said tankr deck, said loading arm comprising:
- a pair of lengths of pipe pivotally joined together to form an articulated pipe assembly;
- a pair of movable supports for mounting said pipe assembly for movement across said deck of said tanker;
- means for connecting each of said supports to a corresponding one of the end portions of said pipe assembly;
- guide means mounted on said deck of said tanker for guiding said supports as said supports move across said deck;
- means for selectively connecting each end of said pipe assembly to one of said manifold ports;
- means for selectively coupling either end of said pipe assembly to said petroleum transfer hose; and
- means for pivotally moving said lengths of pipe to position a first end of said pipe assembly relative to a second end of said pipe assembly.

4,269,240

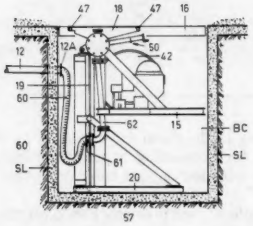
UNIT ADAPTED TO BE COMPLETELY HIDDEN IN THE GROUND AND INTENDED TO BE USED IN AIRCRAFT REFUELLING OPERATIONS

Gaetano Cutore, Via Asmara 33, Rome, Italy

Filed Feb. 14, 1979, Ser. No. 12,123
Claims priority, application Italy, Feb. 23, 1978, 48162 A/78
Int. Cl.[3] B65B *3/04;* B64F *1/28*
U.S. Cl. 141—392 3 Claims

1. An improved unit adapted to be completely hidden in the ground and intended to be used to refuel aircraft with a fuel contained within a tank placed at a distance from said aircraft through an underground delivery pipe-line, said unit essentially comprising: a cavity or pit having the shape of a rectangular parallelepipedon and dug in the ground; a movable rectangular platform carrying all the apparatus, devices, fitters,

accessories, connecting and supplying tubes and control means required to refuel an aircraft; a frame anchored to said platform; a rectangular cover mounted to slide horizontally from a closed position to an open position, said cover being mounted on said frame above said platform and having the same size as the opening of said pit; means for supporting and lifting said platform, received within said pit; means for guiding the vertical movements of said platform, completely received within said pit; and connecting means for connecting an underground pipe-line ending at said pit to a connecting tube carried by said movable platform, the components of said unit being so arranged that said platform can move from an inoperative lowered portion wherein said cover in the closed portion is flush with edges of said pit thus closing completely and hiding said unit placed below the cover, to a completely raised delivery position wherein said platform is at essentially the same level as said edges of said pit once said cover has been moved to the open position thus leaving the unit completely exposed, said platform supporting and lifting means including means enabling the platform to stop in a plurality of partially raised positions even at the slightest elevation needed to extend a refuelling hose, said means enabling the platform to stop providing that said cover can be moved horizontally in coordination with the raising movement whereby the refuelling operation can be performed through the opening thus obtained without lifting said unit to the completely raised position; the means for guiding the vertical movement of the platform comprising: two pairs of vertically arranged hollow guide members identical with each other are arranged at the sides of said



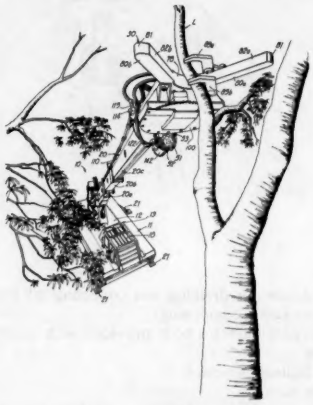
hydraulic unit and aligned therewith and extending between said platform and the bottom of said pit, said hollow guide members being each made from a solid metal sheet and shaped as a prism of an irregular cross-section having a wall, called main wall, bearing a plate at one end and having a central longitudinal slot, extending throughout the remaining length of said main wall, a web integral with said plate, a support element of cylindrical shape mounted at the end of said web and three hermetically closed and self-lubricated ball bearings freely rotating between the branches of three corresponding forks, each radially spaced of 120° from the other and integral with said cylindrical support, said two hollow guide members being placed side by side and one being upside-down in respect to the other, the respective main walls thereof being adjacent and parallel to each other, the web of one of said hollow guide members being received within the slot of said other hollow guide member, so that said three bearings integral with the respective cylindrical support of each of said hollow guide members are received within the cavity of said other hollow guide member and in rolling engagement with three inner walls thereof not adjacent to each other, for relative axial movement of the guide members of each pair; the unit further comprising a safety device adapted to prevent said sliding cover from sliding back to its completely closed position during a refuelling operation, said safety device comprising: spring biassed hang means pivoted so as to rotate from an inoperative lowered position, against the action of said spring means, when the delivery head means is attached thereto, to an operative, safety raised position, where they are biassed by said spring means, whenever said delivery head means is detached from said hang means in order to perform said refuelling operation, and wherein said hang means are in the path of said cover preventing the same from sliding back to its completely closed position.

4,269,241

PROCESS AND APPARATUS FOR SEVERING LIMBS

Lewis Hickman, Montgomery, Ala., assignor to Products for Energy, Inc., Montgomery, Ala.

Filed Jan. 15, 1979, Ser. No. 3,229
Int. Cl.³ F16M *11/04;* B27L *1/00*
U.S. Cl. 144—2 Z **28 Claims**



1. A limb severing apparatus of the type having a vehicle provided with a telescoping boom pivotally mounted by its proximal end portion to the vehicle for rotation of the boom about an upright axis and for pivotal movement of the boom about a transverse axis adjacent to the vertical axis, the distal end of said boom being extendable and retractable, the combination therewith of a limb engaging and cutting assembly mounted on the distal end of said boom, said assembly including:

(a) support means mounted on said distal end of said boom;
(b) a rotatable member carried by said support means and rotatable with respect thereto;
(c) a pair of diverging guide bars extending from said rotatable member and rotatable therewith, portions of said guide bars inwardly of their outer ends defining a throat therebetween for receiving a limb of a tree, therein;
(d) movable means for releasably confining said limb between said portions of said guide bars;
(e) saw means movable from a position adjacent one side of the confined limb to the other side thereof, through said limb for severing the limb from its tree; and
(f) control means for selectively controlling the rotation of said rotatable means, and the movement of said movable means.

4,269,242

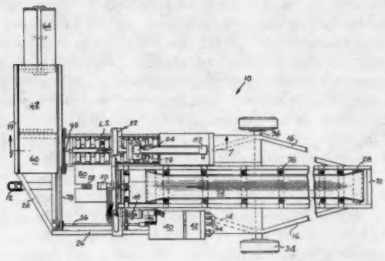
COMBINATION LOG CUTTER, SPLITTER AND BUNDLER

Clark K. Smith, 5406 Wedding Ct., Waldorf, Md. 20601, and Harry W. Staley, 4338 Harney Rd., Taneytown, Md. 21787

Filed Jan. 4, 1978, Ser. No. 866,846
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—192 **9 Claims**

1. A trailer for cutting, spliting and bundling logs of indeterminate length comprising a trailer hitch, a frame network attached to said trailer hitch, a pair of wheels carried on an axle supporting said frame network remote from said trailer hitch,

a first conveyor disposed on said frame network for conveying logs of indeterminate length to a cutting station also disposed on said frame network, a first limit switch disposed on said frame network to stop said log conveyor and actuate a saw defining said cutting station when the log enters said cutting station, a tray disposed on said frame network oriented to receive a log element that has been cut at said cutting station and inclined from a horizontal plane whereby the log element will roll down said tray onto, a second conveyor disposed on said frame network having a second limit switch which senses the presence of said cut log element when the log element rolls thereon, a ram means disposed on said frame network axially



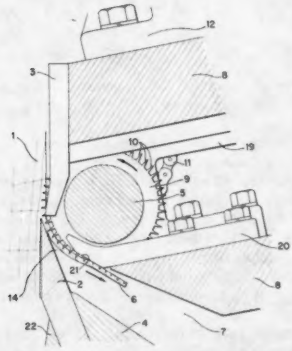
aligned with said second conveyor and said cut log element activated by said second limit switch, splitting means axially aligned with said cut log element opposite from said ram means, whereby said ram means forces said cut log element through said splitting means to provide a plurality of split wood elements, return means to return said ram to its initial position upon splitting said cut log element, and a third conveyor for removing said split, cut wood elements away from said splitting station to bundling means disposed at the terminal point of said conveying means to receive and bundle said split, cut wood elements said bundling means defined by a substantially U-shaped hopper so that the log elements tend to stack uniformly therein.

4,269,243

VENEER LATHE

Katsuji Hasegawa, Ohbu, Japan, assignor to Meinan Machinery Works, Inc., Ohbu, Japan

Filed Jul. 17, 1978, Ser. No. 924,891
Int. Cl.[3] B27L *5/02*
U.S. Cl. 144—213 **17 Claims**



1. A veneer lathe comprising:

means for rotatably supporting a log by means of a spindle at its axial ends, and said means being connected to a first drive mechanism for rotating said log;

a knife, having a knife edge, adapted to be oriented in a tangential relation to said log, with said knife edge being substantially near a point of tangency, and extending along the log's axial length;

at least one drive roller provided slightly ahead of said knife edge in a facing relation to said log, and said drive roller being connected to a second drive mechanism;

a plurality of edge members mounted on said drive roller around the outer periphery thereof in a plurality of rows;

pressure means provided on at least one side of each said row for pressing said logs slightly ahead of said knife edge;

means for increasing the speed of revolution of said log supporting means in accordance with a decrease in a log's diameter; and

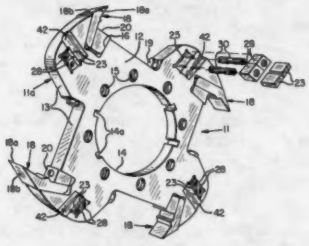
means for feeding the drive roller, the knife, and said pressure means toward said log such that said edge members on said drive roller come into piercing engagement with the log surface slightly ahead of said knife edge to turn said log, and said feeding means being adapted to continue the feed in accordance with the decrease in the log's diameter.

4,269,244

ROTARY CHIPPING HEAD

Phillip W. Kinsella, LaCenter, Wash., assignor to Schurman Machine Works, Inc., Woodland, Wash.

Filed Jul. 13, 1978, Ser. No. 923,929
Int. Cl.[3] B27G *13/10*
U.S. Cl. 144—218 **9 Claims**



1. A rotary chipping head for a chipping edger machine for forming a smooth flat face on a wooden workpiece, the chipping head comprising:

a rotary head member having means for mounting said member for rotation about an axis, opposite end faces in planes normal to said axis including a flat workpiece-confronting face extending normal to said axis and a radially outer periphery defining the outer limits of said faces;

chipping means at said outer periphery and next adjacent to said workpiece-confronting face including a small number of chipping knives, each knife having a straight chisel-type chipping edge normal to said face at the radially outer limits of said outer periphery for progressively chipping a thickness of material from a wooden workpiece in a chisel-cutting action in the form of pulp chips as said workpiece moves linearly and non-rotationally relative to said workpiece-confronting face and in the plane of said face, thereby leaving a flattened face on the workpiece;

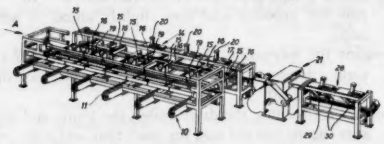
and planing means on said workpiece-confronting face radially inwardly of said chipping edge for smoothing in a planing action said flattened face formed by said chipping means as said head member rotetes progressively removing material from the workpiece;

said planing means including one planing means for each chipping knife, each of said planing means having a planing edge substantially parallel to said workpiece-confronting face.

4,269,245
INFEED MECHANISM

Erik G. Fornell, and Hans G. U. Eklund, both of Söderhamn, Sweden, assignors to Kockums Industri Aktiebolag, Sweden

Filed Feb. 21, 1979, Ser. No. 13,631
Claims priority, application Sweden, Feb. 17, 1978, 7801850
Int. Cl.[3] B27B *1/00, 31/06*
U.S. Cl. 144—245 A 3 Claims



1. Apparatus for feeding waned boards to an edger, comprising:

(a) a cross-conveyor for moving the boards individually in a direction transverse to the length;

(b) automatic means for taking measurements of the boards one at a time while on said cross-conveyor;

(c) a computer connected to said means to store and process the measurements, and being adapted to be programmed to optimize yield;

(d) slide planes disposed adjacent to the discharge end of said cross-conveyor for receiving individual boards therefrom and for supporting each board;

(e) means for centering and side-adjusting each board on said slide planes, and being controlled by said computer in response to the measurements of that board;

(f) a longitudinal conveyor disposed to received boards from said slide planes and to transfer boards to the edger;

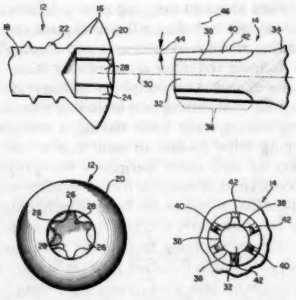
(g) means for lowering said slide planes to thereby transfer the board on said slide planes onto said longitudinal conveyor; and

(h) means for maintaining the adjusted orientation of each board as it enters the edger.

4,269,246
FASTENER AND DRIVER ASSEMBLY

Eugene R. Larson, and Walter Harms, both of Rockford, Ill., assignors to Textron Inc., Providence, R.I.

Filed May 10, 1979, Ser. No. 37,689
Int. Cl.[3] B25B *15/00*
U.S. Cl. 81—460 4 Claims

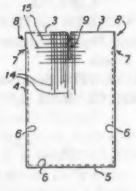


1. A fastener and driver combination comprising: a fastener having a recessed drive socket, said socket including a center axis and being multilobular in cross-section and having an inner surface formed by alternating and smoothly joined flutes and lobes which extend longitudinally, and essentially parallel to said socket center axis; and a driver for imparting rotational torque to said fastener and including a driving head portion having a tip end and a center axis, said driving head portion having an outer surface portion, including a plurality of axially extending flutes and lobes sized for mating engagement with the corresponding flutes and lobes of said drive socket, said driving head portion in cross-section being multi-lobular with the outer surface portion thereof comprising a first set of concaved, longitudinally extending curved surfaces and a second set of longitudinally extending convexed curved surfaces, said first and second sets of curved surfaces alternating and merging smoothly to define said plurality of axially extending flutes and lobes, with the apecies of said convexed curved surfaces defining longitudinally extending crests portions for said lobes, and the apecies of said concaved curved surfaces defining longitudinally extending trough portions for said lobes and only one of said first or second sets of curved surfaces and the crest or trough portions defined thereby being axially parallel to said center axis of said driving head portion, while the other said set of curved surfaces and the crest or trough portions defined thereby being tapered axially, such that said last mentioned tapered crest or trough portions converge in a direction toward said tip end to enable said driving head portion to enter said fastener drive socket to a predetermined depth with interferring engagement being attained only between said axially tapered crest or trough portions and the set of mating surfaces of said socket, thereby to control and insure the desired depth of engagement of said driver head portion in said drive socket while attaining a friction fit between said fastener and said driver which serves to maintain said fastener mounted on the end of said driver.

4,269,247
LARGE SIZE SACK AND METHODS FOR THE FORMATION THEREOF

Bjarne Omdal, Porsgrunn, Norway, assignor to Norsk Hydro a.s., Oslo, Norway

Continuation of Ser. No. 659,185, Feb. 18, 1976, abandoned.
This application Feb. 26, 1979, Ser. No. 15,181
Int. Cl.[3] B65D *30/02, 33/06*
U.S. Cl. 150—12 5 Claims



1. A large size sack for the transport, lifting and storage of large quantities of free-flowing bulk materials, said large size sack comprising:

a single piece of woven material formed of woven lengthwise strips and transverse strips;

said single piece of woven material being folded in half along a fold line extending transverse to said lengthwise strips, thus forming a sack top at said fold line and two overlapped sack panels having adjacent sack bottom edges extending parallel to said fold line and parallel adjacent sack side edges extending transverse to said fold line between opposite ends of said bottom edges and said fold line;

said adjacent sack bottom edges being closed to form a closed sack bottom;

said adjacent sack side edges being sewn together from said sack bottom to positions spaced from said fold line to form two sack side seams, said side seams being spaced from said fold line to define therebetween two side openings;

said sack panels having therein, at a location between said side edges thereof, a single longitudinal slit extending

perpendicularly from said fold line and parallel to said side edges, said slit forming a sack filling opening;

portions of said sack panels between said slit and said two side openings forming two lifting loops for lifting the sack, said lifting loops comprising unbroken integral elongations of said woven material of said sack panels;

substantially all of said lengthwise strips of said woven material being continuous and unbroken by said slit, such that upon lifting the sack by said lifting loops, the critical stress along said lengthwise strips from said fold line to said sack bottom is evenly distributed among all of said lengthwise strips; and

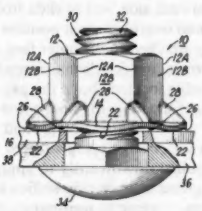
said woven material having a sufficient size and strength such that the sack can be filled with a quantity of free-flowing bulk material of a weight of from several hundred kilograms to several tons without rupture of said material when the thus filled sack is lifted by said lifting loops.

4,269,248

FASTENER WITH FLEXIBLE FLANGE

Barry L. MacLean, Libertyville, and William L. Grube, Lake Bluff, both of Ill., assignors to MacLean-Fogg Company, Mundelein, Ill.

Filed Apr. 20, 1979, Ser. No. 31,760
Int. Cl.³ F16B *39/28*
U.S. Cl. 411—186 **9 Claims**



1. A threaded fastener for use in a threaded joint and comprising a solid body portion including a wrenching structure and having a workpiece engaging end, a thread structure including a plurality of thread convolutions, flange means at the workpiece engaging end of the body portion, said flange means including a plurality of resilient and flexible flange segments extending both radially and axially outward from the workpiece engaging end of said body portion, said flange being connected throughout its inner periphery to said body portion, and reinforcing means interspersed between said flange segments and cooperating with said body portion to render the radially inner boundary and the lateral boundaries of said flange segments substantially rigid.

4,269,249

TIRE CHAINS AND A TOOL FOR APPLYING THEM TO A TIRE

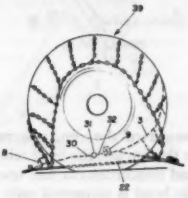
William B. McLean, 1711 Hassam Rd., Coraopolis, Pa. 15108

Filed Feb. 27, 1979, Ser. No. 15,665
Int. Cl.³ B60C *27/06*
U.S. Cl. 152—213 A **14 Claims**

1. In a tire chain having an inner side longitudinal chain, an outer side longitudinal chain, a plurality of transverse chains connecting said inner side longitudinal chain and outer side longitudinal chain at intervals and disposing said longitudinal chains in spaced, parallel relation, means for connecting one end of the outer side longitudinal chain to its opposite end, and means for connecting one end of the inner side longitudinal chain to its opposite end, the improvement comprising the combination wherein the means for connecting said ends of the inner side longitudinal chain comprises:

(a) a connecting link attached to one end of the inner side longitudinal chain;

(b) a hook having an elongated shank section attached at one end by means of a ring section to the other end of the inner side longitudinal chain and at its other end to a bight section which first curves away from the shank section, then curves toward the ring section and terminates in a point such that the hook is formed with interior and exterior arcuate surfaces, and such that the point is spaced from the shank section, said hook being further characterized by at least one protuberance on the bight section of the hook adjacent the point; and



(c) means for engaging the hook in said connecting link when they are separated and require tension to bring them into engagement comprising a flexible cord and a terminal link consisting of two parallel, spaced longitudinal bars connected by front and rear transverse bars connected to one end of said flexible cord, said terminal link being passable with the cord through the connecting link and engagable with the bight section of the hook between the point and the protuberance such that as tension is applied to the other end of the cord in the direction of said hook, the connecting link is drawn toward the hook and passes over the terminal link and engages with the bight of the hook.

4,269,250

RUBBER COMPOSITION HAVING IMPROVED ADHESION TO METAL CORD

John G. Harrison, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 781,244, Mar. 25, 1977, abandoned.
This application Apr. 6, 1979, Ser. No. 27,570
Int. Cl.³ B60C *9/02*
U.S. Cl. 152—358 **15 Claims**

1. In a composite vulcanizate of rubber and wire reinforcement therefore, where said rubber contains carbon black and sulfur and where said wire is selected from at least one of brass and brass-plated steel and is optionally woven, the improvements in which (A) said rubber composition comprises about 0.1 to about 10 volume percent polysulfide polymer, based upon the total polymeric content of the rubber composition, and (B) in the preparation of the rubber composition, a portion of the rubber is optionally premixed with said polysulfide polymer prior to mixing with the carbon black; where said rubber is selected from at least one of the group consisting of natural rubber, SBR rubber, polybutadiene, polyisoprene and ethylene/propylene/dicyclopentadiene terpolymer.

4,269,251

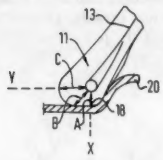
TIRE AND WHEEL ASSEMBLIES

Wilfred H. Harrington, Solihull, and William L. Jackson, Sutton Coldfield, both of England, assignors to Dunlop Limited, England

Filed Jul. 10, 1979, Ser. No. 56,263
Claims priority, application United Kingdom, Jul. 29, 1978, 31657/78
Int. Cl.³ B60C *7/24, 15/00*
U.S. Cl. 152—362 R **19 Claims**

1. A tire and wheel rim assembly, the wheel rim comprising

a pair of bead seats, one at either side of the rim and the tire comprising a pair of beads each containing a substantially inextensible, circumferentially extending bead reinforcement and at least one of the beads having a sector of elastomeric material extending for at least 60° around the reinforcement in a direction axially inwards of the bead from the radial plane containing the axis of the reinforcement, the sector having a construction which, when part of the bead is subjected to a



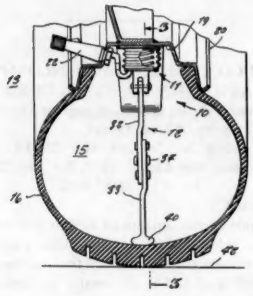
turning moment inward of the rim, generates a substantial radial force between the rim and the bead reinforcement acting outwards on the bead reinforcement and inwards on the rim, but which, when the bead is subjected only to an axial bead displacement force, generates no substantial radial force, said substantial radial force increasing with increasing turning moment of said bead part and serving to retain said at least one bead in place on said rim.

4,269,252

TIRE PRESSURE MAINTENANCE DEVICE

David Shapiro, 555 Greenplace, Woodmere, N.Y. 11598

Filed Jul. 16, 1979, Ser. No. 57,893
Int. Cl.³ B60C *23/12*
U.S. Cl. 152—426 **4 Claims**



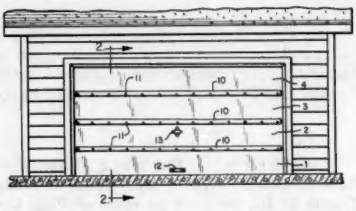
1. A tire pressure maintaining device, comprising in combination an air bellows for positioning within the tire, an air inlet coupled to said air bellows for entry of atmosphere air into said air bellows, an air outlet on said air bellows for exit of air from said bellows into the tire, lever arm means having one end thereof coupled to said air bellows for operation thereof and the other end thereof freely extending to the inner wall of the tire, and biasing means coupled along the mid-section of the lever arm means for bearing said other end of the lever arm means against the inner wall of the tire, said lever arm means comprising a first section comprising said one end thereof and a second end, a second section comprising said other end thereof and a fourth end, and pivot means interconnecting said second and fourth ends of said first and second sections, respectively, said biasing means comprising a spring coupling across said interconnecting ends for urging the sections into substantially colinear position, said spring expanding when the tire goes flat to permit bending of the two sections toward each other, whereby the cyclical deformation of the tire as it rolls causes a reciprocating movement of the air bellows, and wherein said biasing means also facilitates collapsing of said lever arm means in the event of a flat tire to thereby protect the tire and the air bellows.

4,269,253

GARAGE DOOR AND SAFETY GUARD THEREFOR

Robert J. Ziegler, 0058 Maroon Dr., Aspen, Colo. 81611

Filed Jun. 13, 1979, Ser. No. 48,229
Int. Cl.³ E06B *7/16, 7/23*
U.S. Cl. 160—201 **1 Claim**



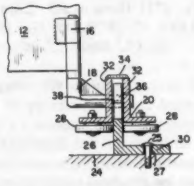
1. A roll-type door such as a garage door having a plurality of horizontally disposed panels hingedly connected together at their adjacent inside edges and being adapted to cooperate with tracks, one on each side, and to slide from verticle closed position to horizontal overhead open position and vice versa, a flexible guard strip attached to the outer face of the lowermost of two hingedly connected panels and extending upwardly to provide an upper edge located above the gap created between the adjacent edges of the hingedly connected panels when the door is moving in a closing direction around curved positions of said tracks, said upper edge being adapted to be grasped by the operator and pulled downwardly to apply a closing force to said door, said guard strip having sufficient strength in the direction of its vertical plane to transmit such applied closing force to said door and a height sufficient to locate its upper edge above the upper edge of its associated panel to provide an effective shield for the gap when formed between the edges of said hingedly connected panels and said guard strip having sufficient transverse flexibility to bend outwardly throughout the portion above its line of attachment to its associated panel to avoid the application of hurtful pressure being exerted on the finger or fingers of the operator when the finger or fingers of the operator are inserted between the upper inside surface of said guard strip and the outside surface of the next above panel during closing movement of said door.

4,269,254

TROLLEY AND TRACK

Francis B. Horton, 7 Pinecrest Dr., Wellington, Kans. 67152

Filed Mar. 5, 1979, Ser. No. 17,117
Int. Cl.³ E05D *15/26*
U.S. Cl. 160—206 **4 Claims**



1. In a closure device of the type comprising a plurality of pairs of hinged panels operative to fold and stack when moved relative to a floor or the like from a closed position to an

opened position, an improved bottom trolley and fixed track structure comprising:

(a) a plurality of trolleys, each trolley being individual to a pair of hinged panels;

(b) a track cooperating with all trolleys, said trolleys being operative to align said track automatically prior to fixing said track to said floor; and

(c) means for fixing the track to the floor after said automatic alignment;

said tracks being formed with a vertical web and the trolley includes a plurality of guide means operative to straddle said vertical web; said trolley being formed with a plurality of bearing roller members in rolling contact with the vertical web operative to support hinged pairs of panels; said trolley comprising a pair of L-shaped members defining a pair of spaced vertical webs and a pair of horizontal webs, said vertical webs being joined by a bridge member.

4,269,255

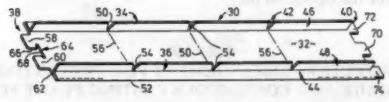
FIRE DAMPER FRAMES

Michael T. Nailor, 189 Old Yonge St., Willowdale, Ontario, Canada (M2P 1R2), and Andrew J. Hart, 15-33 Four Winds Dr., Downsview, Ontario, Canada (M3J 1K7)

Filed Oct. 23, 1979, Ser. No. 87,611

Int. Cl.³ F23L *13/10*

U.S. Cl. 160—381 **8 Claims**



1. A one piece frame for fire dampers and the like, the frame being of centrally open, generally rectangular shape formed from a folded elongated sheet metal blank which, in its unfolded form, comprises:

(a) a longitudinally extending central web portion of planar form

(b) side edge portions which are longitudinally bent so as to define:

(i) a pair of longitudinally extending marginal regions of double blank thickness for permitting mounting of the frame in an air duct or the like and;

(ii) a pair of longitudinally extending parallel flanges disposed inwardly of said marginal regions and extending perpendicular to and disposed at the same side of the planar web portion, said flanges being divided into sections by V-shaped notches which extend over the entire height of the flange and which are intended to define corners of the completed frame, each section being aligned with sections of the other flange transversely of the blank and extending along a side of the completed frame;

(c) a first end portion including two tabs which extend beyond an outer edge of said web portion and which are shaped to define therebetween an open T-shaped slot having a stem portion and a transverse portion, said transverse portion defining part of said outer edge;

(d) a second end portion including a central tab shaped to fit through and fold over the transverse portion of the T-shaped slot when the frame is in its folded form and adapted to be folded over to retain the frame in said form, and outer tabs adapted to be folded over said outer edge of the web when the frame is in its folded form;

said blank being folded transversely at the positions of said notches with the flanges extending inwardly in forming the frame.

4,269,256

PROCESS FOR PREPARING MOLD

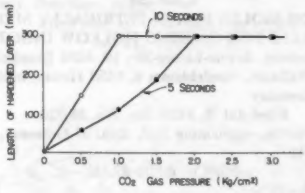
Tetsuo Nakazawa, Shimoinayoshi; Junji Sakai, Minorimachi, and Syogo Morimoto, Matsudo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 893,013, Apr. 3, 1978, abandoned. This application Sep. 17, 1979, Ser. No. 76,229

Claims priority, application Japan, Apr. 4, 1977, 52-37621; Apr. 4, 1977, 52-37622

Int. Cl.³ B22C *1/22, 9/12*

U.S. Cl. 164—16 **8 Claims**



1. A process for perparing a mold by hardening molding materials by CO_2 gas which comprises mixing refractory particles with a binder material comprising a caustic alkali-neutralized product of at least one copolymer selected from the group consisting of α-olefin-maleic anhydride copolymer, styrene-maleic anhydride copolymer, and methylvinyl ether-maleic anhydride copolymer, and calcium hydroxide, thereby preparing molding materials, filling the molding materials around a pattern, and blowing CO_2 gas into the molding materials, thereby hardening the molding materials.

4,269,257

METHOD OF SEQUENTIAL CONTINUOUS-CASTING OF DIFFERENT GRADES OF STEEL

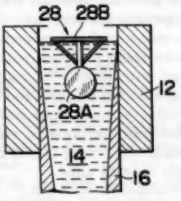
Hideshi Ohzu; Hisashi Ohmori; Mizuo Maeda, and Hiromi Ohtani, all of Okayama, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Jun. 19, 1979, Ser. No. 49,885

Claims priority, application Japan, Jul. 5, 1978, 53-82246

Int. Cl.³ B22D *11/06*

U.S. Cl. 164—86 **2 Claims**



1. A method of sequential continuous casting wherein continuous casting of a first grade of molten steel is changed over to continuous casting of a second grade of molten steel different in constituent from the first grade of molten steel, comprising the steps of:

stopping the pouring of the first grade of molten steel into a mold;

immersing a cooling material formed of a columnar steel stock with its longitudinal axis parallel to one of the transverse axis of the mold and being circular or polygonal in cross section and equipped with guiding jigs transverse to its longitudinal axis into the substantially center portion of the first grade of molten steel in said mold, the length l and the largest transvere dimension d of said cooling material satisfying the following two formulas for said mold hav-

ing the width of about 1500 mm and the thickness of about 220 mm

Mold width—200 mm<l<Mold width—100 mm

Mold thickness—100 mm<d<Mold thickness—20 mm;

forming around said cooling material a solified layer merging in a solidified shell developed from the wall of said mold; and

pouring the second grade of molten steel into said mold before the surface of the first grade of molten steel above said cooling materials is solidified.

4,269,258

CORE FOR MOLDS FOR ELECTRICALLY MELTING METALS FOR CASTING HOLLOW INGOTS

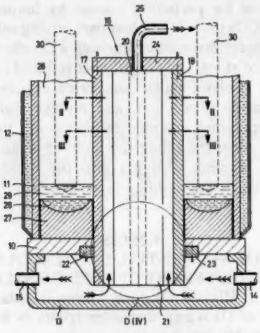
Heinrich Sonntag, Justus-Liebig-Str. 19, 6454 Bruchköbel, and Helmut Wallasch, Sandeldamm 6, 6450 Hanau, both of Fed. Rep. of Germany

Filed Jul. 5, 1979, Ser. No. 55,220

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1978, 2831842

Int. Cl.³ B22D *27/02*

U.S. Cl. 164—252 **3 Claims**



1. A mold core for the electrical melting of metals to form hollow ingots, comprising: means forming a longitudinally divided and disassemblable cylindrical wall having outer dimensions corresponding to that of the ingot cavity, the means including at least two partial cylindrical shells and at least two inwardly removable stave-like pressure members each having a radial portion extending between two shells, and abutting same along two contact surfaces, a crossbar bearing from within on the cylinder shells to define with the radial portion a generally T-shaped cross section for each pressure member and gasket means between the crossbar and the inner surface of the shells for providing a liquid-tight seal, thrust tightening means connected between the pressure members for radially moving same and draft tightening means connected between the shells for radially moving same.

4,269,259

PULL-BACK RAM CYLINDER APPARATUS

Toyoaki Ueno, Yamaguchi, and Masashi Uchida, Ube, both of Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

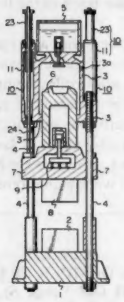
Filed Jun. 25, 1980, Ser. No. 162,772

Claims priority, application Japan, Jul. 26, 1979, 54-94238

Int. Cl.³ B22D *17/26*

U.S. Cl. 164—303 **5 Claims**

1. A pull-back ram cylinder apparatus in combination with a vertical mold clamping machine including a stationary hydraulic cylinder platen having a lower open end for actuating a first ram extending downwardly through the lower open end of said cylinder platen, said first ram being fixed at the lower end thereof to a movable platen for carrying a movable mold, said apparatus comprising: at least a hydraulic cylinder, mounted to said cylinder platen, having upper and lower open ends for actuating a second ram extending upwardly through the upper open end of said cylinder, and; a ram rod extending downwardly from the lower head end of said second ram through the lower open end of said cylinder, the lower portion of said cylinder being restricted to form a throttle portion having an inner diameter slightly larger than the outer diameter of said



second ram, which outer diameter is larger than that of said ram rod, said throttle portion having radial openings for discharging an operation oil, said openings being spaced apart from the neighbouring opening in an axial direction, said spaced openings being communicated with corresponding lines for the operation oil.

4,269,260

PROTECTION ARRANGEMENT FOR PREVENTING DAMAGE AT A CONTINUOUS CASTING PLANT FOR SLABS

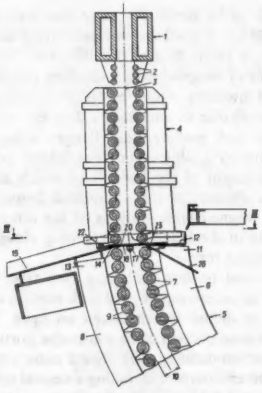
Kurt Engel, Leonding, and Werner Scheurecker, Linz, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Apr. 19, 1979, Ser. No. 31,538

Claims priority, application Austria, May 3, 1978, 3198/78

Int. Cl.³ B22D *11/128*

U.S. Cl. 164—442 **4 Claims**



1. In a protection arrangement for preventing damage at a plant for continuously casting a strand having the form of a slab with two broad sides and two narrow sides, in case of a breakthrough of molten metal through the solidified skin of the strand, of the type including a mould, a supporting stand for said strand, and a horizontally disposed collecting system for collecting the molten metal, said collecting system being pro-

vided below said mould at said supporting stand and enclosing said strand in the peripheral direction, said collecting system including collecting plate means adapted to be displaced and adjusted relative to the strand skin, the improvement which is characterized in that said collecting plate means include

two separate first collecting plate units allocated to the two broad sides of the strand,

two separate second collecting plate units separate from said first collecting plate units and allocated to the two narrow sides of the strand, said second collecting plate units positioned closely above and overlapping said first collecting plate units,

means for separately connecting each of the two first collecting plate units to said supporting stand, and

adjusting means for displacing said second collecting plate units relative to said strand.

4,269,261

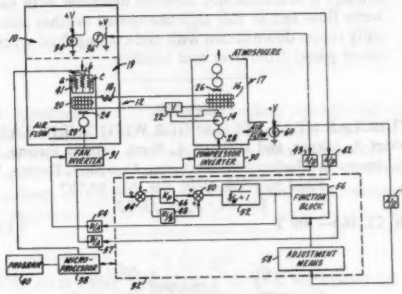
MICROCOMPUTER CONTROL FOR SUPPLEMENTAL HEATING IN A HEAT PUMP

Kenneth J. Kountz, Hoffman Estates, Ill.; Kenneth W. Cooper, York, Pa., and Frederic H. Abendschein, Columbia, Pa., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Sep. 28, 1979, Ser. No. 80,361

Int. Cl.³ F28B *29/00*

U.S. Cl. 165—2 **9 Claims**



9. A method for use in a heat pump and refrigeration system for conditioning a space having a closed refrigerant circuit including a compressor, a condenser, an expansion device, and an evaporator connected respectively in series, said method comprising the steps of:

sensing the actual temperature of a space to be conditioned to generate a signal representative of the measured temperature;

setting a reference temperature of the space to be conditioned to generate a second electrical signal representative of the reference temperature;

sensing the temperature of the outdoor atmosphere to generate a third electrical signal representative of the outdoor atmospheric temperature;

providing a condenser fan motor for driving a condenser fan at its full rated-speed to direct air into the conditoned space;

providing a compressor motor for driving the compressor;

connecting a motor speed control device to the compressor motor for controlling continuously and discretely the speed thereof between a predetermined minimum speed to a maximum predetermined value in excess of its full rated-speed or 100%;

generating a digital signal to drive the motor speed control device in response to the measured temperature, the reference temperature and the outdoor temperature;

allowing the digital signal when the outdoor temperature is below a predetermined set point to cause the motor speed control device to drive the compressor speed to a speed in excess of its rated-speed, up to the maximum predetermined value, to provide initial supplemental heating; and

controlling through a microprocessor having a program the step of generating the digital signal to affect the measured temperature of the conditioned space.

4,269,262

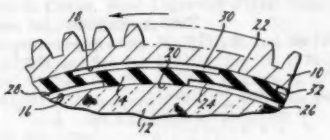
ELASTIC MOUNTING STRUCTURE FOR CERAMIC REGENERATOR CORE

Charles A. Knapp, Grosse Pointe Woods, and V. Durga N. Rao, Bloomfield Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 5, 1979, Ser. No. 17,293

Int. Cl.³ F28D *19/00*

U.S. Cl. 165—8 **4 Claims**



1. A rotary regenerator comprising a cylindrical, ceramic core having axial gas flow passages therein, a metallic ring gear surrounding said core, the inside diameter of said ring gear being greater than the outside diameter of said cylindrical core, said ring gear and said core defining therebetween a circular annular space, and an elastomer drive means between said ring gear and said core in said space and comprising first portions bonded to the inner peripheral surface of said ring gear intermediate but not extending to the axial extremities of the ring gear and second portions bonded to the outer peripheral surface of said core at axially opposite sides of said first portion, said first portions being spaced circumferentially with respect to the second portions, each of said second portions being offset with respect to the adjacent first portion, the surfaces of the elastomer opposite the bond between said gear and said first portions being radially spaced from said core and the surfaces of said elastomer opposite to the bond of said second portions to said core being radially spaced from said ring gear, the elastomer between said first portions and the adjacent second portions being radially spaced from both said ring gear and said core whereby a cushioned, compliant, torque transmitting means is provided between said ring gear and said core.

4,269,263

COOLING AND HEATING SYSTEM UTILIZING SOLAR HEAT

Katsurou Yukimachi, Sakai, and Kouichi Katayama, Minoo, both of Japan, assignors to Osaka Gas Kabushiki Kaisha, Hiranomachi, Japan

Filed Feb. 21, 1979, Ser. No. 13,313

Claims priority, application Japan, Mar. 2, 1978, 53/024751; Sep. 12, 1978, 53/112751

Int. Cl.³ F25B *29/00, 27/00*

U.S. Cl. 165—29 **6 Claims**

1. In a cooling and heating system utilizing solar heat comprising:

a solar heat collector (1),

a heat accumulator (2) for storing fluid heated by solar heat obtained by said solar heat collector (1),

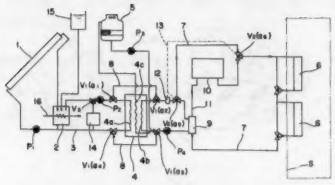
a single-effect absorption type refrigerator (4) connected to said heat accumulator (2) via heated fluid circulating lines (3), and actuated by said heated fluid supplied from said heat accumulator (2) to produce chilled fluid,

at least one air-conditioning unit (6) connected to said single-effect absorption type refrigerator (4) via air-conditioning fluid circulating lines (7), and adapted to cool or heat space (S) to be air-conditioned,

heated fluid bypass lines (8) provided between said heated fluid circulating lines (3) and said air-conditioning fluid circulating lines (7) to bypass said single-effect absorption type refrigerator (4), and

change-over valves (V_1) provided at junctions (a_1), (a_2), (a_3), (a_4) of said heated fluid bypass lines (8) to said heated fluid circulating lines (7), and adapted to selectively change-over between a heating state to supply said heated fluid from said heat accumulator (2) directly to said air-conditioning unit (6) and a cooling state to supply said heated fluid from said heat accumulator (2) to said single-effect absorption type refrigerator (4) and supply the chilled fluid generated by the single-effect absorption type refrigerator (4) to said air-conditioning unit (6),

the improvement comprising:



a further bypass line (11) connected in parallel to an intermediate portion of a forward passage of said air-conditioning fluid circulating lines (7),

change-over valves (V_2) provided at junctions (a_5), (a_6) of said further bypass line (11) to said forward passage of said air-conditioning fluid circulating lines (7) and adapted to selectively changeover between a state to bypass and a state not to bypass said heated or chilled fluid from said forward passage of said air-conditioning fluid (7) to said further bypass line (11), and

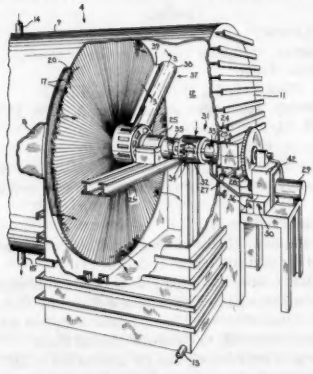
an auxiliary gas-burning double-effect absorption type refrigerator (10) provided on an intermediate portion of said further bypass line (11) to further heat or chill the heated or chilled fluid supplied from said forward passage of said air-conditioning circulating lines (7).

4,269,264

CLEANING OF HEAT EXCHANGER TUBING

Richard W. Goeldner, Neptune Beach, Fla., assignor to Water Services of America, Inc., Milwaukee, Wis.

Filed Jul. 3, 1978, Ser. No. 920,644
Int. Cl.³ F28G *1/02*
U.S. Cl. 165—95 **4 Claims**



1. In a device of the character described:

(a) a heat exchanger housing,

(b) main cooling fluid input and output lines connected to said housing,

(c) fluid supply means operable to provide main cooling fluid flow at a given pressure through said input line and said housing to said output line,

(d) a plurality of tubes disposed within said housing for carrying said main cooling fluid in a downstream direction from said input line to said output line, said tubes having upstream and downstream ends,

(e) cleaning assemblies mounted on the downstream ends of said tubes and with said assemblies including tube cleaning brushes,

(f) means disposed at only one end of said tubes for compartmentalizing said tubes into a plurality of bundles,

(g) a fluid counter-flow cover disposed in facing relationship with a portion of the compartmentalized tube ends,

(h) fluid flow reversal means connected to said cover for reversing the downstream direction of flow of only a part of said main cooling fluid at the downstream tube ends during operation of said fluid supply means and providing a fluid back-flow upstream through said tubes at a pressure greater than said given pressure and against the normal flow of said main cooling fluid to thereby carry said brushes upstream therewith,

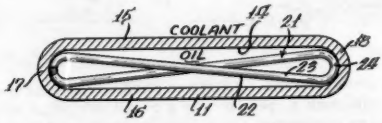
(i) and means to move said cover progressively across the said bundles of tube ends so that a portion of the said brushes is automatically directed upstream with said reverse flow and so that said last-named brushes automatically return downstream with said cooling fluid when said cover passes from over said bundles.

4,269,265

TUBULAR HEAT EXCHANGER WITH TURBULATOR

Robert A. Meyer, and Richard A. Bretl, both of Racine, Wis., assignors to Modine Manufacturing Company, Racine, Wis.

Filed Nov. 29, 1979, Ser. No. 98,707
Int. Cl.³ F28F *13/12*
U.S. Cl. 165—109 T **3 Claims**



1. A tubular heat exchanger for liquids with a turbulator in the tube offering low resistance to internal liquid flow, comprising: a liquid flow tube having an inside surface and transverse minor and major inner dimensions, said major inner dimension being greater than said minor inner dimension; and an elongated internal turbulator comprising a continuous length of heat conducting wire spanning the length of said tube, said wire having successive undulations in contact with said inner surface, said turbulator substantially spanning said tube in said transverse major dimension.

4,269,266

RECUPERATOR TUBE CONSTRUCTION

William R. Coates, Jr., Monroeville, and M. William Vance, Export, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

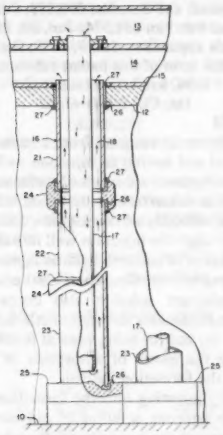
Filed Aug. 23, 1979, Ser. No. 69,002
Int. Cl.³ F28D *7/12*
U.S. Cl. 165—142 **4 Claims**

1. In a recuperator which includes a floor and a roof, cold air and hot air chambers above said roof, a plurality of vertically extending outer tubes and respective inner tubes within said outer tubes, said outer tubes being closed at their lower ends and communicating at their upper ends with one of said chambers, said inner tubes being open at both ends and communicat-

ing at their upper ends with the other of said chambers, the outside of said outer tubes being subject to exposure to hot waste gases to heat cold air passing through the tubes, the improvement in which:

said outer tubes comprise a plurality of relatively short length sections of ceramic joined end-to-end;

solid base blocks on said floor on which the lowermost of said sections rest to support the weight of the outer tubes;



the uppermost of said sections extending through said roof; collars encircling the joints between sections; and

gaskets of ceramic fiber material providing seals where the uppermost section extends through said roof, within said collars, and where the lowermost section contacts said base block.

4,269,267

FIN AND TUBE ASSEMBLY AND A METHOD OF MAKING THE ASSEMBLY

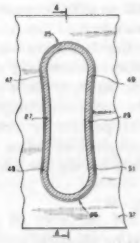
Jean-Paul Labrande, Rambouillet, France, assignor to Societe Anonyme Francaise du Ferodo, France

Filed Aug. 25, 1978, Ser. No. 936,748

Claims priority, application France, Sep. 9, 1977, 77 27358

Int. Cl.³ F28F *1/32*

U.S. Cl. 165—181 **11 Claims**



1. A heat exchanger comprising a plurality of tubes mounted in apertures in a plurality of fins to extend transversely thereto, said apertures being oblong in cross section with relatively small ends and relatively long, convex sides extending into said apertures, said tubes being oblong with relatively small ends and relatively long flanks in cross section, said tube ends being plastically deformed to mate with said small ends of said apertures to cause said tube flanks to be elastically urged against said convex sides of said aperture.

11. A product of a process for forming a heat exchanger, the process comprising

locating a plurality of tubes in apertures in plurality of fins to extend transversely relative thereto, said apertures being oblong in cross section with relatively small ends and relatively long, convex sides extending into said apertures, said tubes being oblong in cross section with relatively small ends and relatively long, parallel flanks in cross section; and

plastically deforming said tube ends to mate with said aperture ends to cause said tube flanks to be elastically urged against said convex sides of said aperture.

4,269,268

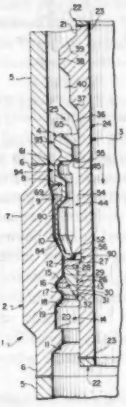
HANGER APPARATUS FOR SUSPENDING PIPES WITH POSITIVE RETRIEVAL CAPABILITY

William S. Cowan, West University Place, Tex., assignor to Armco Inc., Middletown, Ohio

Continuation-in-part of Ser. No. 915,829, Jun. 16, 1978, Pat. No. 4,167,970, and Ser. No. 915,830, Jun. 16, 1978, Pat. No. 4,167,971, and Ser. No. 915,902, Jun. 16, 1978, Pat. No. 4,181,331. This application Sep. 17, 1979, Ser. No. 76,185

Int. Cl.³ E21B *43/10, 23/00*

U.S. Cl. 166—208 **16 Claims**



1. In a pipe hanger apparatus of the type comprising an outer hanger body having a transverse annular inwardly opening locking groove; a hanger mandrel dimensioned to pass downwardly within the outer hanger body and having an axially elongated transverse annular recess opening outwardly into the annulus between the mandrel and outer hanger body, there being a transverse annular downwardly facing support surface at the upper end of the mandrel recess; and generally annular lock means disposed in the mandrel recess and comprising a heavier main body portion and a thinner, dependent flexible skirt portion, the main body portion having a transverse annular outer locking rib of a configuration to mate with the locking groove of the outer hanger body, the lock means being resiliently deformable radially, the lock means and the outer hanger body having tapered shoulders which coact as camming surfaces to deform the lock means inwardly as the mandrel and lock means is lifted from the outer hanger body, the improvement comprising

means on the main body portion of the lock means presenting a downwardly facing lifting surface located inwardly of the skirt portion; and

means on the mandrel presenting an upwardly facing lifting surface opposed to the downwardly facing lifting surface of the main body portion of the lock means,

movement of the mandrel upwardly relative to the lock means causing the lifting surface of the mandrel to

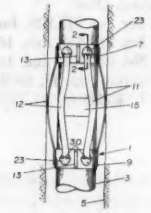
engage the lifting surface of the main body portion of the lock means, whereby after the hanger has landed, an upward strain applied to the pipe string being suspended applies a retrieving force directly to the main body portion of the lock means without applying a significant axially directed force to the dependent skirt.

4,269,269

LOCK TAB FOR CENTRALIZER END RING

Donald R. Wilson, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed May 14, 1979, Ser. No. 38,982
Int. Cl.[3] E21B *17/10*
U.S. Cl. 166—241 1 Claim



1. In a knockdown centralizer of the type having at least two separate end collars with a plurality of openings therein for receiving a plurality of spring bands in non-welded interlocking fulcrumed engagement with said end collars, said spring bands having inwardly projecting lug means attached to opposite end poritions for providing arcuate inner longitudinal interlock surfaces, said end collars having arcuate inner longitudinal surfaces defining opening means for receiving and longitudinally restraining said lug means while allowing rotation between said lug means and said opening means and having an overlying means for partially radially overlying said opening means and radially inwardly restraining said lug means which said opening means, wherein the improvement comprises:

said spring bands having a recess formed in each end therein by inwardly displacing said lug means from a portion of said spring band to form an integrally attached lug means having an integrally attached end and an arcuate shaped free end thereby creating an abutment surface in said spring band and an abutment surface on the free end of said lug means whereby said arcuate shaped free end abuts an arcuate inner longitudinal surface of said opening means in said end collar when said spring band is assembled thereto; and

deformable tab means formed on each said overlying means for partially radially overlying said opening means, said deformable tab means formed having an end surface for abutting said abutment surface of said recess in said spring band when said spring band is assembled to said end collar and said deformable tab means is deformed into said recess in each end of said spring band

whereby longitudinal movement of said spring band with respect to said end collar in a first direction is prevented by said arcuate shaped free end of said lug means abutting a surface of said opening means in said end collar and longitudinal movement of said spring band with respect to said end collar in a second direction is prevented by said end surface of said deformable tab means abutting said abutment surface of said recess in said spring band thereby preventing longitudinal movement of said spring band with respect to said end collar.

4,269,270

SULFOMETHYLATED LIGNOSULFONATES AS ADDITIVES IN OIL RECOVERY PROCESSES INVOLVING CHEMICAL RECOVERY AGENTS

George Kalfoglou, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 901,365, Apr. 28, 1978, Pat. No. 4,172,498, and Ser. No. 745,494, Nov. 26, 1976, abandoned, which is a continuation-in-part of Ser. No. 715,957, Aug. 19, 1976, abandoned, and Ser. No. 591,573, Jun. 30, 1975, abandoned, and Ser. No. 591,574, Jun. 30, 1975, Pat. No. 4,006,779. This application Jul. 5, 1979, Ser. No. 54,773
The portion of the term of this patent subsequent to Oct. 30, 1996, has been disclaimed.
Int. Cl.[3] E21B *43/22*
U.S. Cl. 166—273 4 Claims

1. A method for recovering oil from a subterranean formation containing oil and having an injection well and a production well wherein aqueous solutions of surfactant and polymer are injected into the subterranean formation wherein the polymer increases the viscosity of the solution comprising:

(a) injecting through the injection well into the formation an aqueous solution of sulfomethylated lignosulfonates,

(b) then injecting into the formation via the injection well an aqueous surfactant solution also containing sulfomethylated lignosulfonates said sulfomethylated lignosulfonates of steps (a) and (b) being present in amounts effective for reducing the extent of adsorption of surfactant and polymer by the formation matrix,

(c) subsequently injecting into the formation via the injection well an aqueous solution of polymer wherein the polymer increases the viscosity of the solution and

(d) producing oil from the formation via the production well.

4,269,271

EMULSION OIL RECOVERY PROCESS USABLE IN HIGH TEMPERATURE, HIGH SALINITY FORMATIONS

Russell D. Shupe, Ponca City, Okla., and Jim Maddox, Jr., Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed May 1, 1978, Ser. No. 901,388
Int. Cl.[3] E21B *43/22*
U.S. Cl. 166—274 14 Claims

1. A method for recovering petroleum from a subterranean, permeable, petroleum-containing formation penetrated by at least one injection well and by at least one spaced-apart production well, both wells being in fluid communication with the formation, the temperature of the formation being from about 70° F. to about 300° F., said formation containing water having a salinity from 30,000 to 220,000 parts per million total dissolved solids, comprising:

(1) injecting into the formation via the injection well a phase-stable surfactant-containig emulsion comprising a continuous, saline, aqueous phase and a dispersed hydrocarbon phase, the surfactant comprising:

(a) from 0.05 to 10.0 percent by weight of a water soluble alkylpolyalkoxyalkylene sulfonate or alkylarylpolyalkoxyalkylene sulfonate having the following formula:

$$RO(R'O)_xR''SO_3-M^+$$

wherein R is an alkyl or alkylaryl group, linear or branched having from 8 to 24 carbon atoms in the alkyl chain, R′ is ethylene or a mixture of ethylene and propylene having relatively more ethylene than propylene, x is a number from 1 to 20, R″ is ethylene, propylene, hydroxypropylene or butylene, and M^+ is a monovalent cation; and

(b) from 0.1 to 5.0 percent by weight of a low HLB, water insoluble nonionic surfactant having the following formula:

$$R'''O(CH_2CH_2O)_yH$$

wherein R''' has the same meaning as R and y is a number from 1 to 10;

(c) said aqueous phase having a salinity from about 45 to 95percent of the formation water salinity;

(2) thereafter injecting brine into the formation to displace the emulsion through the formation, the salinity of the brine being initially as great as the salinity of the aqueous phase of the emulsion and is decreased to a salinity value less than the salinity of the aqueous phase of the emulsion during the time period during which the brine is injected, said emulsion and brine displacing petroleum through the formation to the production well; and

(3) recovering petroleum displaced by the emulsion and brine from the formation via the production well.

4,269,272

MACHINE FOR PULLING ENDIVES AND OTHER TAP ROOTS

Dominique Cornu, 1411 Chaneaz, Switzerland

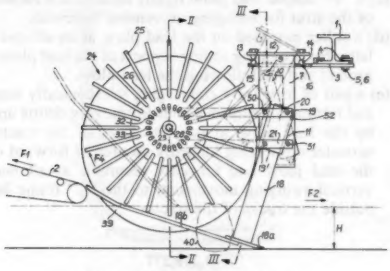
PCT No. PCT/CH78/00028, § 371 Date Jun. 5, 1979, § 102(e) Date Jun. 5, 1979, PCT Pub. No. WO79/00191, PCT Pub. Date Apr. 19, 1979

This PCT application filed Jun. 5, 1979, Ser. No. 45,690

Claims priority, application Switzerland, Oct. 7, 1977, 12284/77

Int. Cl.[3] **A01D** *19/10, 25/04*

U.S. Cl. 171—116 **16 Claims**



1. A mobile machine for uprooting endives and other tap roots, comprising a frame, an uprooting plowshare carried by said frame, a rotatable disc spaced transversely from said plowshare and located rearwardly of the plowshare in the direction of movement of the machine, a rotatable spoked wheel located along side said disc, motor means for driving said spoked wheel at a speed different from that of said disc and a tangential speed greater than the travelling speed of the machine, at least one of said discs and said spoked wheel being inclined in relation to the vertical to form a V, said disc and spoked wheel cooperating to lift and free from dirt said roots uprooted by said plowshare, and conveying means receiving said roots from said disc and spoked wheel.

4,269,273

LAND SURFACING APPARATUS

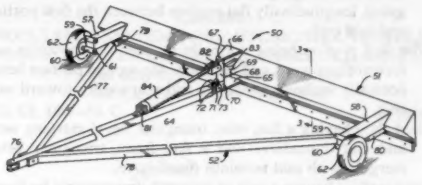
Hume W. Colville, Murray St., Barham, New South Wales, Australia

Filed Jun. 26, 1979, Ser. No. 52,284

Int. Cl.[3] **A01B** *63/16, 63/111*

U.S. Cl. 172—397 **7 Claims**

1. Land surfacing apparatus, comprising an elongate blade and a towing structure which includes a tow connection portion spaced laterally of the blade from a central part of the blade for connection to a tow vehicle and which is connected to the blade such that the blade can be towed with its longitudinal dimension transverse to the tow direction while biased by its own weight into engagement with the ground with a longitudinal edge thereof serving as a soil scraping edge and a leading face extending upwardly from the scraping edge; said towing structure being pivoted to said blade about a side to side axis of the apparatus generally parallel to said blade and positioned forwardly of said blade in said tow direction, an extensible link being provided between said tow structure and said blade and operable by variation of the effective length thereof to vary the angular relationship, about said axis, between the tow structure and blade thus in use to vary the angle of the blade to the ground; said blade being provided with ground wheels disposed at locations inboard of opposite ends of the blade, said ground wheels being arranged for rotation



about a common axis forward, in said tow direction, of the blade, and positioned so as to be clear of the ground during normal land surfacing operation of the apparatus but such that by operation of said extensible link, the angular relationship between the tow structure and blade can be varied to a relationship at which said wheels are brought into contact with the ground to lift said blade from the ground.

4,269,274

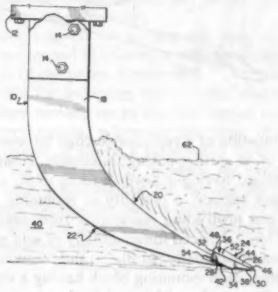
STREAMLINED WEAR-RESISTANT DEEP TILLAGE TOOL

Forrest E. Robertson, and Donald E. Williams, both of Garden City, Kans., assignors to Acra Plant, Inc., Garden City, Kans.

Filed Jun. 11, 1979, Ser. No. 47,202

Int. Cl.[3] **A01B** *13/08*

U.S. Cl. 172—699 **1 Claim**



1. In a farm implement:

a normally horizontal tool bar;

an elongated, solid, deep tillage shank attached to the bar and depending therefrom,

said shank having a pair of opposed, flat, horizontally spaced, upright walls, an upper, longitudinally concave, downwardly and forwardly sloping top, a lower, longitudinally convex, downwardly and forwardly sloping bottom, and a leading edge,

said top and bottom spanning the distance between said walls and converging as said edge is approached; and

a shoe releasably attached to said shank,

said shoe being provided with an elongated body having a pair of opposed, parallel, flat, horizontally spaced, upright sides provided with upper, straight, downwardly and forwardly sloping, longitudinal extremities, a forwardmost, elongated, straight, sharpened terminus, a flat rearmost end extending upwardly beyond said top, an elongated, downwardly and forwardly inclined, uppermost

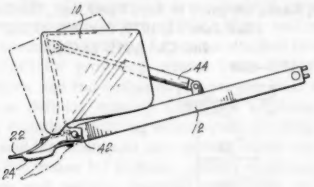
surface, and an elongated, lowermost, transversely flat face,
the distance between said sides being greater than the distance between said walls,
said terminus and said end spanning the distance between said sides,
said surface extending between said terminus and said end,
said face having a first, elongated portion extending forwardly beyond said edge at an elevation lower than the latter and merging with said terminus and a second elongated, longitudinally flat portion between the first portion and said end,
the first portion being normally inclined downwardly and forwardly toward said terminus, the second portion being normally inclined upwardly and rearwardly toward said end,
said shoe having a flat, rear, triangular bevel merging with said end thereabove and a flat, front, triangular bevel merging with said terminus thereabove,
said surface having a pair of opposed, transversely inclined, essentially triangular sections merging into an uppermost ridge spanning the distance between said bevels.

4,269,275

REPLACEABLE EDGE BIT ASSEMBLY

Lucien Cousin, 749 Stirling St., Labrador City, Canada (A2V 1Y9)

Filed Jul. 24, 1979, Ser. No. 60,157
Claims priority, application Canada, Sep. 26, 1978, 312123
Int. Cl.³ E02F 3/76
U.S. Cl. 172—719 **2 Claims**



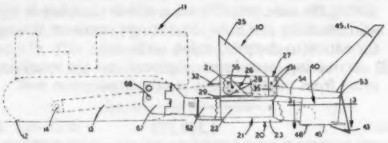
1. The combination of a replaceable edge bit assembly with a mold board of an earth-working implement, comprising:
(a) a mold board having a lower leading edge, a front surface, a back surface, a plurality of mounting blocks secured to and protruding rearwardly from said back surface, said blocks spaced longitudinally of said mold board and located substantially parallel to and rearwardly of said leading edge, each mounting block having a top face and a bottom face, said mold board further having as many slots as there are mounting blocks, extending through the molding board, and each opening at said back surface adjacent the top face of the associated mounting block;
(b) a replaceable edge bit having a leading edge, a front portion adapted to engage and overlie the lower front edge portion of the mold board and a rear portion adapted to engage and overlie the lower rear edge portion of said mold board, front and rear brackets secured to and extending rearwardly from the front portion and rear portion, respectively, of said edge bit, there being as many front and rear brackets as there are mounting blocks, said front brackets removably extending through said slots and engageable with the top faces of said mounting blocks, said rear brackets removably engaging the bottom faces of said mounting blocks, means for removably locking said front and rear brackets to said mounting blocks, said locking means being entirely disposed rearwardly of said mold board and edge bit; and
(c) a skid shoe secured underneath the rear portion of said edge bit.

4,269,276

PLOW ATTACHMENT ASSEMBLY FOR A CRAWLER-TYPE TRACTOR

Lyle C. Cazes, 81 Hamm Rd., R.R. 1, Abbotsford, British Columbia, Canada (V2S 1M3)

Filed Jul. 25, 1979, Ser. No. 60,799
Int. Cl.³ E02F 3/76
U.S. Cl. 172—832 **4 Claims**



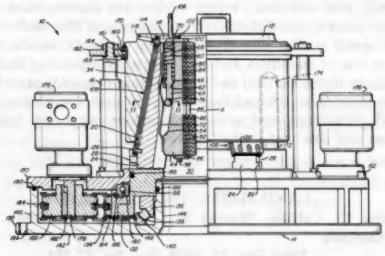
1. A plow apparatus for attachment to crawler-type tractors having tracks and an elevatable "C" frame, comprising:
(a) a "V" shaped trailing plow adapted to be rididly secured to the forward end of the "C" frame for vertical movement therewith and having a lower portion with a width substantially equal to the distance between the tracks of the tractor,
(b) a fore and aft extending strut hingedly secured at an aft end to the trailing plow for vertical swinging movement,
(c) a "V" shaped lead plow rigidly secured at a forward end of the strut for swinging movement therewith,
(d) a roller mounted on the lead plow at an aft end of the latter for providing rolling support of the lead plow on the ground surface following the lead plow,
(e) a pair of forwardly converging telescopically extensible and retractable spreader arms for moving debris uprooted by the lead plow to opposite sides of the tractor, the spreader arms being hingedly secured at forward ends to the lead plow and hingedly securable at aft ends, for vertical swinging movement, to the "C" frame laterally outside the tracks of the tractor.

4,269,277

POWER SLIP ASSEMBLY

Benton F. Baugh, Houston, Tex., assignor to Brown Oil Tools, Inc., Houston, Tex.

Filed Jul. 2, 1979, Ser. No. 54,160
Int. Cl.³ B23Q 5/027, 5/033
U.S. Cl. 173—149 **32 Claims**



1. Apparatus for manipulating tubular members comprising:
(a) slip carrier means mounted on carrier actuator means arranged generally about a passage and movable generally radially relative thereto;
(b) slip means, for gripping such tubular member, on said slip carrier means whereby movement by said slip carrier means generally radially inwardly relative to said passage may effect gripping engagement between said slip means and said tubular member within said passage;
(c) first surface means as part of said slip carrier means and second surface means as part of said carrier actuator

means for cooperating with said first surface means for wedging said slip carrier means and said slip means against said tubular member so engaged by said slip means when longitudinal force is applied to said tubular member by said slip means; and

(d) drive means linked to said carrier actuator means whereby generally longitudinal movement of said drive means propels said carrier actuator means radially relative to said passage.

4,269,278

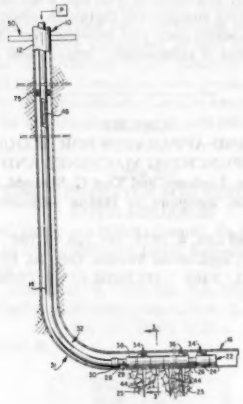
METHOD AND APPARATUS FOR COMPLETING A SLANTED WELLBORE

Roy R. Vann, Artesia, N. Mex., assignor to Peabody Vann, Houston, Tex.

Continuation of Ser. No. 842,565, Oct. 17, 1977, Pat. No. 4,194,577. This application Jan. 8, 1980, Ser. No. 110,507

Int. Cl.³ E21B *43/118*

U.S. Cl. 175—4.51 **9 Claims**



1. Apparatus for completing a lower marginal end of a cased slanted borehole comprising a perforating gun for perforating the borehole, said gun having a main housing within which there is formed a plurality of shaped charges for perforating a casing;

a casing engaging member attached to said main housing and extending radially away from said main housing in opposition to the direction in which said shaped charges are oriented to fire;

a swivel means, a tubing string, a firing head attached to the uphole end of said gun, means associated with said firing head for detonating each of said shaped charges, said shaped charges being oriented respective to one another and to said main housing to fire in a direction which forms an included angle of less than 180°, said gun is connected to said swivel means and said swivel means is connected to said tubing string; whereby, the gun can be run downhole and into the slanted portion of the borehole, and thereafter the firing head can be actuated to detonate the shaped charges to cause the casing in the slanted part of the borehole to be perforated in a downward direction.

4,269,279

SPHEROIDAL PLASTIC COATED MAGNETIZABLE PARTICLES AND THEIR USE IN DRILLING FLUIDS

Roy F. House, Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.

Filed Jan. 14, 1980, Ser. No. 111,681

Int. Cl.³ E21B *3/00, 7/00*

U.S. Cl. 175—66 **12 Claims**

1. In a method of drilling a well wherein a drill string is rotated to drill a borehole into the earth and a drilling fluid is circulated down through the drill string and the sides of the borehole to remove the cuttings therefrom, said drilling fluid containing a solid bead lubricant to reduce the friction between the drill string and the sides of the borehole, the improvement which comprises utilizing as said solid bead lubricant smooth-surface plastic spheres having a core of a magnetizable material.

4,269,280

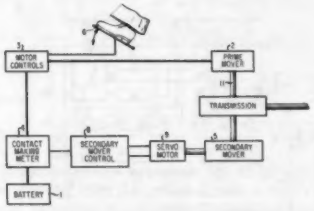
PROPULSION SYSTEM FOR AUTOMOTIVE VEHICLES

Charles L. Rosen, 277 Churchill Rd., Teaneck, N.J. 07666

Filed May 5, 1978, Ser. No. 903,104

Int. Cl.³ B60L *15/38;* B60K *9/00*

U.S. Cl. 180—54 C **2 Claims**



1. A vehicle propulsion apparatus comprising:

(a) a prime mover;

(b) a secondary mover including an output controller, for activating the secondary mover;

(c) a drive train;

(d) a transmission, which said transmission couples the output torque produced by the said primary and secondary movers, to the drive train;

(e) a sensor adapted for sensing the state of stress of the prime mover and producing a response related to the state of stress of the prime mover; and

(f) a control for accepting the response and activating the secondary mover, up to the full output capacity of the secondary mover, whenever the state of stress of the prime mover is above a preselected threshold value, in which the control also includes an electrical control motor and means adapted for causing the motor to progressively depress the output controller of the secondary mover when the state of stress of the prime mover is above the preselected threshold value.

4,269,281

AUTOMATIC TRANSMISSION DIGITAL CONTROL SYSTEM

Yves Schneider, Paris, and George Dubuisson, Poissy, both of France, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 30, 1978, Ser. No. 910,784

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1977, 2726115

Int. Cl.³ B60K *17/06*

U.S. Cl. 180—70 R **16 Claims**

1. In a motor vehicle having an engine, means for furnishing a present speed signal indicative of the then-present engine speed, means for furnishing a present load signal indicative of the then-present engine load, means for furnishing a present gear signal indicative of the presently engaged gear, and automatic transmission means having a plurality of selectable gears, the improvement comprising a digital control system for controlling said transmission means in accordance with characteristic curves of engine load vs. engine speed, said control system comprising

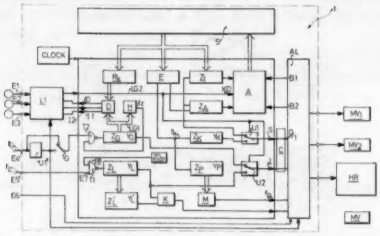
main storage means (St) having a plurality of sets of storage

locations each for storing a set of constants for approximating one of said characteristic curves;

present load number furnishing means (Z_L, T1) connected to said present load signal furnishing means for receiving said present load signal and furnishing a binary present load number corresponding thereto;

addressing means (A) connected to said main storage means for addressing a selected one of said sets of storage locations in response to address control signals (B1, B2) applied thereto, whereby said main storage means furnishes a read-out set of constants read out from the so-selected one of said sets of storage locations;

computing means (E, Z_K) connected to said main storage means for computing a limiting load number (Y_K) under control of said read-out set of constants;



comparator means (C) connected to said present load number furnishing means and said computing means for furnishing a first or second comparator output signal when said limiting load number is greater or less than said present load number, respectively;

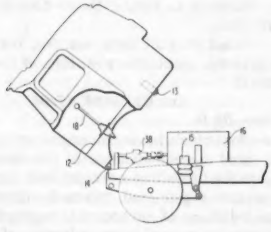
and output logic means (AL) connected to said present gear signal furnishing means, said comparator means, and said addressing means for furnishing said address control signals in response to said present gear signal, and for furnishing an upshift or downshift gearshift control signal in response to a predetermined one of said present gear signals only in the presence of said first or second comparator output signal, respectively.

4,269,282

GEAR SHIFT CONTROL

Leslie A. Meacock, II, Emmaus, and Edward C. Merkel, Palmerton, both of Pa., assignors to Mack Trucks, Inc., Allentown, Pa.

Filed May 31, 1979, Ser. No. 44,165
Int. Cl.[3] **B62D** *33/06*
U.S. Cl. 180—328 **31 Claims**



1. A tilt cab vehicle having a gear shift lever apparatus that moves with the cab when it is tilted for access to other parts of the vehicle, comprising

(a) a tiltable cab having a floor and being tiltable from a closed position where said cab covers certain parts of said vehicle and an open position where said certain parts of said vehicle are exposed for access;

(b) a shift lever;

(c) means for transferring shift lever motion to a gear train in said vehicle;

(d) said shift lever, extending through said cab floor, having an upper end exposed within the cab for shifting by an operator and a lower end in releasable engagement with said means for transferring the lever motion to the gear train;

(e) said shift lever being tiltable with said cab, said lower end being disengaged from said transfer means when said cab is in the open position and engaged with said transfer means when said cab is in said closed position;

(f) isolation means for substantially isolating said lever from cab movement when said cab is in the closed position; and

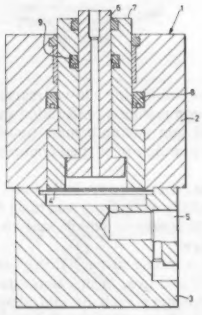
(g) fixed support means fixed to said vehicle substantially independently of movement of said tilt cab for supporting said shift lever when said cab is in said closed position, said isolation means including resilient means for biasing said lever into engagement with said fixed support means and maintaining engagement therewith while the cab is in the closed position such that movement of the cab in the closed position is substantially independent of said shift lever.

4,269,283

METHOD AND APPARATUS FOR ACOUSTICAL DAMPING OF PUNCHING MACHINES AND THE LIKE

Bo C. Bramberger, Lindome, and Kurt G. Stenudd, Gothenburg, both of Sweden, assignors to Hakan Sallander, Tranemo, Sweden

Filed Oct. 4, 1979, Ser. No. 81,786
Claims priority, application Sweden, Oct. 10, 1978, 7810567
Int. Cl.[3] **F16F** *7/00;* **F01B** *11/02, 29/00*
U.S. Cl. 181—207 **4 Claims**



2. Apparatus for damping noise and vibrations in machines having transient force relieving of the type appearing in punching or cutting presses, comprising a housing defining a closed chamber, a first piston adapted to be exposed to the force for pre-compressing a hydraulic fluid in the chamber, a second piston exposed to the hydraulic fluid and adapted to be exposed to the force immediately before the force relief, and at least one valve in an exhaust line from the chamber, said valve being arranged to open at a predetermined pressure in the chamber.

4,269,284

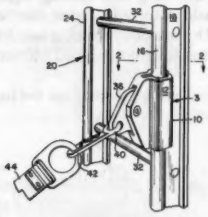
SLIDING CLAMP AND ADAPTOR

William E. Swager, P.O. Box 498, Fremont, Ind. 46737

Filed Sep. 25, 1978, Ser. No. 945,792
Int. Cl.[3] **E06C** *7/18;* **A62B** *1/16*
U.S. Cl. 182—8 **14 Claims**

1. A clamp having a rail clamping means and a housing

portion shaped for mounting about and sliding longitudinally upon the surface of a supporting rail, an elongated supporting rail surface portion for disposal within said housing surface portion of said clamp for sliding support thereof and for clamping engagement by said clamping means, and an adaptor element mounted replaceably fixed in said housing and against



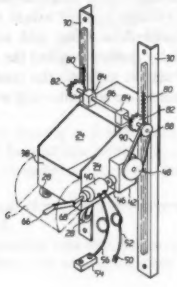
lateral movement between said inner housing surface of said clamp and said rail surface sized for spacing and support of said clamp for easy sliding movement of said clamp on said rail support, said rail clamping means movable into engagement with said rail surface through an open portion of said adaptor and operative by a movement of an arm extending outward of said clamp for clampingly engaging said rail surface.

4,269,285

LIFTING APPARATUS FOR ELECTRICAL SWITCHBOARDS

Isao Ohkoshi, Tama, and Hideki Ikeuchi, Fuchu, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 9, 1978, Ser. No. 959,060
Claims priority, application Japan, Nov. 9, 1977, 52-133568
Int. Cl.³ B66B *9/20*
U.S. Cl. 187—9 R **6 Claims**



1. A lifting apparatus for racking an electrical device into and out of a compartment in an electrical switchboard, wherein said lifting apparatus comprises in combination:

a carriage upon which said electrical device is mounted;

a plurality of rollers operatively associated with said carriage;

guide rails directly mounted on the electrical switchboard and supporting said carriage for movement relative to the electrical switchboard such that said rollers move along said guide rails:

means for pivotably mounting at least one pair of said plurality of rollers on each side of said carriage for cooperation with said guide rails so that the carriage may be readily removed from said guide rails to traverse across a floor surface;

means for moving said carriage connected to said carriage including chains mounted on said guide rails; and

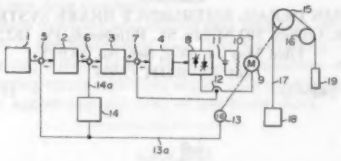
pinion means connected to said carriage and engaged with said chains.

4,269,286

SPEED CONTROL APPARATUS FOR ELEVATOR SYSTEM

Toshiaki Ishii, and Eiki Watanabe, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1979, Ser. No. 15,239
Claims priority, application Japan, Feb. 24, 1978, 53-21321
Int. Cl.³ B66B *5/02*
U.S. Cl. 187—29 R **5 Claims**



1. In a speed control apparatus for an elevator system in which an elevator cage is suspended from a main rope coupled to a motor, wherein a speed control system including an acceleration feedback circuit is employed to control cage speed, the improvement comprising:

said acceleration feedback circuit characterized by a transfer function having a gain factor and including a command circuit for increasing said gain factor; and

a detection circuit for detecting cage speed and for generating a gain control signal in the event that the detected cage speed is within a predetermined speed range identified as causing resonance of said rope;

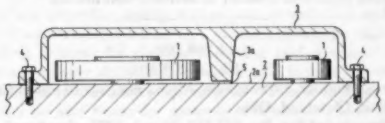
wherein said gain control signal is coupled to said command circuit to increase the gain factor of said acceleration feedback circuit when said detection circuit detects that the cage speed is in said predetermined speed range.

4,269,287

MACHINE HOUSING WITH RELATIVELY THIN-WALLED STRUCTURAL MEMBER

Fritz Rösch, Schwabach, Fed. Rep. of Germany, assignor to Alcan Aluminiumwerk Nürnberg GmbH, Fed. Rep. of Germany

Filed Jun. 6, 1979, Ser. No. 46,011
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1978, 2848503
Int. Cl.³ F16F *15/02*
U.S. Cl. 188—1 B **9 Claims**



1. In a machine housing with a structural member that at least partially encloses a space containing at least a small quantity of liquid, said housing and said member each having wall portions facing into said space, the wall portions of said member including at least one thin wall subject to noise-producing vibration, the improvement which comprises:

(a) means for providing, within said space, a slit-like opening of restricted width accessible to the liquid in said space such that some of said liquid is present in said opening,

(b) said opening being defined between first and second

surfaces of which the first surface is in motion-transmitting relationship with said one thin wall such that said first surface vibrates with said one thin wall and damping of vibration of said first surface attenuates vibration of said one thin wall, the liquid present in said opening acting to damp vibration of said first surface and thereby to attenuate vibration of said one thin wall, and

(c) said opening-providing means comprising at least one element, connected to one of said wall portions and extending toward but not connected to another of said wall portions and having a surface portion constituting one of said first and second opening-defining surfaces, one of the last-mentioned wall portions being said one thin wall.

4,269,288

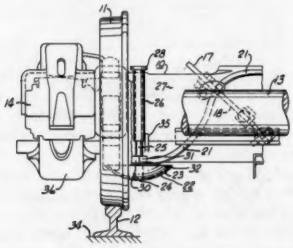
TRAIN DERAIL EMERGENCY BRAKE SYSTEM

Joseph A. Collins, 502 Middle St., Pittsburgh, Pa. 15227

Filed May 11, 1979, Ser. No. 38,017

Int. Cl.[3] B61H *13/00*

U.S. Cl. 188—33 **15 Claims**



1. In a railroad car having an undercarriage with a plurality of wheels for rolling on a track and brakes for said wheels which are activated when fluid pressure in a brake activating fluid supply conduit attached to said brakes is released; a derail emergency brake switch mechanism secured to said undercarriage inboard from said wheels and having a downwardly depending contact member positioned sufficiently higher than the level at which said wheels are in rolling contact with the track to avoid accidental actuation of said mechanism when all wheels are railed, a breakaway coupling mounted on said undercarriage and connected to said fluid supply conduit, said breakaway coupling being adapted to uncouple and to remain open when initially actuated to completely exhaust fluid pressure in said fluid supply conduit, said contact member adapted to slidably contact with a rail or ground debris upon derailment of the car when moving in either a forward or reverse direction to thereby upwardly displace said contact member to uncouple said breakaway coupling and thereby release all fluid pressure from said conduit to activate said brakes.

4,269,289

RETARDER

Peter S. Winkler, Birmingham, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 847,512, Nov. 1, 1977, abandoned. This application May 10, 1979, Ser. No. 38,026

Int. Cl.[3] F16D *65/84*

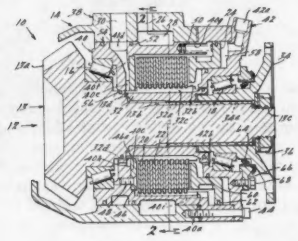
U.S. Cl. 188—71.6 **3 Claims**

1. In a brake of the type including a non-rotating housing and drive shaft means rotatably disposed therein; an annular set of rotor discs secured for rotation with said shaft means, said rotor discs having oppositely facing friction sides; an annular set of stator discs secured against rotation relative to said housing and interleaved with said rotor discs, said stator discs having oppositely facing friction sides; means for selectively squeezing the friction sides of said disc sets together to inhibit rotation of said shaft relative to said non-rotating housing; the improvement comprising:

passage means defined by a portion of said non-rotating housing circumferentially disposed about the outer periphery of said rotor and stator discs for porting a pressurized cooling liquid to the outer periphery of said rotor and stator discs;

flow passages for directing said cooling liquid radially inward between said rotor and stator disc sets, said flow passages defined by smoothly forming said friction sides of said rotor discs and by grooving said friction sides of said stator discs;

a plurality of internal splines defined on the inside diameter of said rotor discs;



a pluratlity of external splines defined by said shaft means and slideably receiving said internal splines for rotatably securing said set of rotor discs to said shaft means, said external splines having a depth in excess to the radially inwardly projecting extent of said internal splines for forming axially extending flow passages directly substantially all of said cooling liquid from said disc sets to an outlet port; and

an annular ring disposed at an outlet end of said axially extending flow passages, said ring extending radially inward beyond the radially inward extent of said disc sets for forcing the outlet flow from said axially extending flow passages radially inward beyond the radially inward extent of said disc sets to improve the cooling liquid flow distribution from said disc sets into said axially extending flow passages.

4,269,290

GUIDING DEVICE FOR BRAKE PAD SUPPORTS OF A SPOT-TYPE DISC BRAKE

Rudolf Thiel, Frankfurt am Main, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Oct. 17, 1979, Ser. No. 86,190

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1978, 2847655

Int. Cl.[3] F16D *65/02*

U.S. Cl. 188—72.3 **8 Claims**

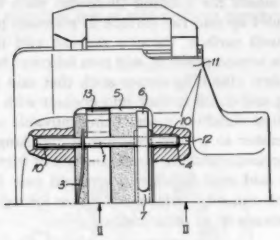
1. A guiding device for brake pad supports of a spot-type disc brake comprising:

a brake housing;

at least one pad positioning pin movable in a guide bore of said housing and frictionally engaging a brake pad support;

a bending spring positively connected to said pin and supported in a recess of said housing transverse to said pin,

said spring being loaded by a brake actuating piston via said support and said pin; and



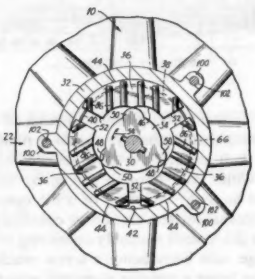
a stop for said pin disposed in said bore to limit the return movement of said support.

4,269,291

VEHICLE DRIVE WITH FREEWHEELING AND BRAKING

George Almond, Trumbull, Conn., assignor to Empire of Carolina, Inc., New York, N.Y.

Filed Jan. 9, 1979, Ser. No. 2,059
Int. Cl.[3] F16D *67/02*
U.S. Cl. 192—6 R 7 Claims



1. In a vehicle having a driven wheel, said driven wheel having a central hub within which there is mean providing a hollow circular chamber concentric with the wheel, a drive comprising:

(A) a disc in said chamber oriented in a plane parallel to that of the wheel,

(B) means mounting said disc for orientation relative to the chamber about an axis coincident with the axis of the wheel,

(C) a ring of brake shoes around the disc,

(i) said brake shoes having outer surfaces facing the circular inner surface of the chamber,

(ii) said brake shoes having inner surfaces facing the outer surface of the disc,

(iii) said brake shoes being shiftable toward and away from the center of the disc,

(D) spring means urging said brake shoes toward the center of the disc,

(E) the ends of the brake shoes approaching abutting end-to-end relationship as they move toward the center of the disc,

(i) the ends of the brake shoes moving apart as the brake shoes move toward the inner surface of the hollow chamber,

(F) cams on the disc,

(G) a cam follower on said brake shoe for cooperation with said cam,

(H) said ring of brake shoes and said disc being angularly movable relative to one another about the axis of the wheel between a first position in which the cam and cam follower are so relatively angularly oriented as to permit the brake shoes to be moved inwardly, thereby leaving clearance between the outer surface of the brake shoes and the cylindrical inner surface of the hollow chamber, and a second position in which the cam and cam follower are so relatively angularly oriented as to shift the brake shoes away from the center of the disc and against the cylindrical inner surface of the hollow chamber,

(J) means to drivingly rotate the disc,

(K) whereby said wheel is rotatably driven when said disc is rotated and said wheel is free of said brake shoe for freewheeling rotation when said disc is stationary,

the improvement comprising;

(I) friction drag members,

(II) means mounting said friction drag members on opposite sides of said brake shoes, said brake shoes being rotatable as a ring relative to said friction drag members, and

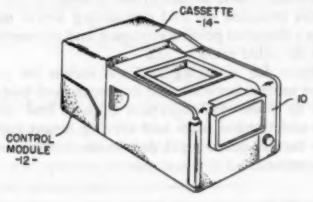
(III) spring means separately urging each of said drag members against opposite sides of said brake shoes.

4,269,292

DRIVE MECHANISM FOR A HIGH SPEED FILM TRANSPORT AND THE LIKE

Charles W. Wright, Los Angeles, Calif., assignor to Scentex Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 941,973, Sep. 13, 1978, abandoned. This application Jul. 27, 1979, Ser. No. 61,317
Int. Cl.[3] F16D *11/06, 43/02*
U.S. Cl. 192—33 R 6 Claims



1. A lost-motion drive mechanism for a high speed X-ray film transport, or the like, comprising: a drive motor; input shaft means rotatably mounted about a first axis; a clutch assembly selectively coupling the input shaft means to the drive motor; an output shaft rotatable about a second axis displaced radially from said first axis; a first actuator coupled to the input shaft means to be rotatably driven thereby about the first axis; a second actuator coupled to the output shaft to be rotatably driven thereby around the second axis; one of said actuators including a pin displaced radially from the axis of rotation thereof and extending axially with respect to such axis, and the other of said actuators including a member defining a radially-extending channel for slidably receiving said pin; a clutch-actuating member slidably mounted on said input shaft means and coupled to said clutch assembly; a frame; a cam member mounted on said frame for movement between a first and a second position; a cam follower mounted on said clutch actuating member and extending radially therefrom to engage said cam member when said cam member is in its first position and thereby move said clutch actuating member in a first direction to cause the clutch to disengage and uncouple the input shaft means from the drive motor; a latch mounted on said frame and coupled to said cam member for retaining the cam member in its first position; and solenoid means mounted on said frame and coupled to said latch for releasing the cam member when the solenoid means is energized to cause said cam follower to move the cam member to its second position and the clutch actuating member to move in a second direction to cause the

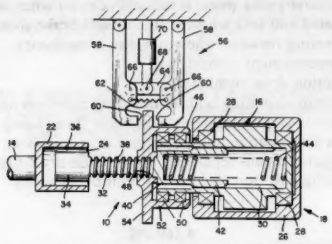
clutch assembly to engage and couple the input shaft means to the drive motor.

4,269,293

ENGINE ACCESSORY DISCONNECT

William B. Martin, Redondo Beach, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Mar. 5, 1979, Ser. No. 17,678
Int. Cl.³ F16D *1/00, 11/04*
U.S. Cl. 192—35 **33 Claims**



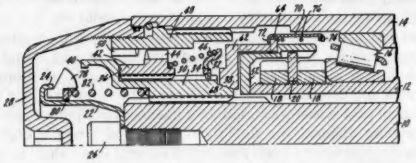
1. Disconnect apparatus comprising:
driving means having an end portion;
driven means having an end portion;
connecting screw means having a threaded portion, a first end portion releasably engaging said driving means end portion, and a second end portion slidably engaging said driven means end portion for transmitting energy from said driving means to said driven means;
nut means mounted on said connecting screw means and having a threaded portion engaging said connecting screw means threaded portion; and
brake means for engaging said nut means for producing relative motion between said nut means and said connect-screw to cause disconnection of said first connecting screw end portion from said driving means end portion and to further cause rapid deceleration of motion of said driven means.

4,269,294

AUTOMATIC CLUTCH

Donald W. Kelbel, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 15, 1979, Ser. No. 66,720
Int. Cl.³ F16D *11/00, 15/00*
U.S. Cl. 192—54 **6 Claims**



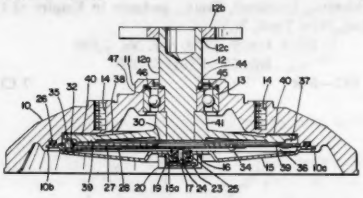
1. An automatic clutch for effecting engagement between rotatable driving and driven members in response to rotation of the driving member, the clutch comprising first and second clutching means respectively rotatable with the driving and driven members, said first clutching means being movable relative to the driving member to first and second positions respectively out of and in clutching engagement with said second clutching means, first biasing means yieldably biasing said first clutching means toward its first position, camming means for moving said said first clutching means to its second position, said camming means including a cam defining rise, dwell and stop surfaces, a cam follower rotatable relative to said cam, and second biasing means yieldably biasing said cam follower toward a first position riding on said rise surface, said cam follower being in frictional engagement with said first clutching means for rotation therewith such that said cam follower rides up said rise surface to a second position riding on said dwell surface, thereby moving said first clutching means to its second position, said cam follower being rotatable with said first clutching means such that said cam follower rides along said dwell surface into contact with said stop surface, said first clutching means being movable relative to the driving member to a third position in clutching engagement with said second clutching means and out of frictional engagement with said cam follower when said cam follower is in contact with said stop surface, and means for moving said first clutching means to its third position.

4,269,295

TORQUE TRANSMITTING FLUID COUPLINGS

Arthur S. Kish, Lyndhurst, Ohio, assignor to Murray Corporation, Cockeysville, Md.

Filed Aug. 1, 1979, Ser. No. 62,753
Int. Cl.³ F16D *35/00, 43/25*
U.S. Cl. 192—58 B **7 Claims**



1. In a torque transmitting fluid coupling of the character described, a drive shaft assembly, a housing rotatably mounted on said drive shaft assembly, a cover secured to said housing, a drive disc within said housing driven by said drive shaft assembly, said housing consisting of a die casting having an unmachined internal surface, said cover consisting of a metallic stamping, said drive shaft assembly consisting of a body and a coupling flange, said body being a screw machine part, said coupling flange being a metallic stamping, which is welded to one end of said body, a bracket spot-welded to the exterior face of said cover, a bimetal strip secured to said bracket, said cover provided at its center with an embossment, forming a recess, a steel bushing mounted in said recess, and riveted to the embossment, a piston pin slidably mounted in the bushing, a cup-shaped rubber-like piston seal mounted in said recess, and an adhesive sealer applied to the periphery of the seal to seal the space between the seal and the inner wall of the embossment.

4,269,296

TWO-STAGE COAXIAL SPRING DAMPER

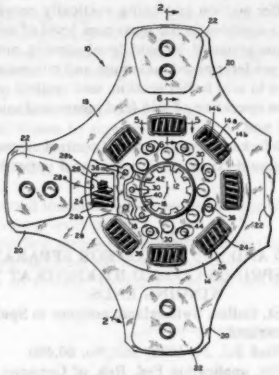
Richard A. Flotow, 904 Elmrow Dr., Fort Wayne, Ind. 46806, and William H. Sink, P.O. Box 465, Auburn, Ind. 46707

Filed Jun. 27, 1979, Ser. No. 52,898
Int. Cl.³ F16D *3/66*
U.S. Cl. 192—106.2 **7 Claims**

1. A torque transmitting device comprising,
a hub;
a cover secured to said hub, said cover defining at least one opening having spaced side walls;
a plate mounted on said hub for limited rotation relative to said hub and said cover, said plate defining at least one opening having spaced side walls, said plate opening adapted for alignment with said cover opening;
resilient means disposed in said aligned openings adapted to transmit a yieldable drive between said hub and said plate, said resilient means comprising a first resilient member

and a second resilient member disposed in said first resilient member, each of said resilient members having end portions;

means on at least one of said plate or cover opening side walls for engaging one of said resilient members,



at least one end portion of one of said resilient members spaced from said plate or cover opening side wall and engageable therewith upon limited relative rotation between said plate and said cover, and

at least one end portion of the other of said resilient members engaging said plate or cover opening side wall engaging means.

4,269,297

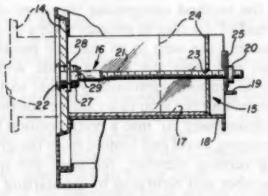
VENDING MACHINE SEE-THRU COIN BOX

Joseph W. Aossey, Cedar Rapids, Iowa, assignor to Aosco & Associates, Ltd., Cedar Rapids, Iowa

Filed Nov. 13, 1979, Ser. No. 93,186

Int. Cl.³ G07F 9/06

U.S. Cl. 194—1 B **6 Claims**



1. A coin box for vending machines including: a coin box shaped for insertion into and removal from an open-ended coin box receiving and supporting structure in a vending machine; a tough hard transparent material front on said coin box shaped to close a coin box opening in a vending machine when said coin box is fully inserted in place in a vending machine coin box receiving and supporting structure; and lock means for interconnecting said coin box and means of said open-ended coin box receiving and supporting structure in a locked state in place in a vending machine and unlock release from a vending machine; wherein said coin box has a rectangular box portion and said front is fastened to the front of said rectangular box portion as an integral part of said box and includes overhang flange means extending outward laterally beyond the walls of said rectangular box portion; said coin box is molded of tough hard transparent plastic material, including said front and said body portion; said coin box is formed with opposite sides and a bottom extending back from interconnection with said front to a rear wall; and with said opposite sides, said bottom, said rear and said front defining an open-topped container for receiving coins inserted into a coin-operated vending machine at a location above the box to fall into the box, where coins contained therein may be viewed through the transparent front of the box; said front is more than twice as thick as the walls of said opposite sides, bottom and rear wall; said lock means includes, a front portion with flange means engaging the outer face of said front, and a longitudinally extended portion extended through the length of said coin box from said front portion and through said rear wall for locking and unlocking engagement with rear lock element means of said coin box receiving and supporting structure to the rear of said coin box; said longitudinally extended portion of said lock means includes a threaded bolt; and with said rear lock element means including a nut mounted on coin box receiving and support structure in a vending machine.

4,269,298

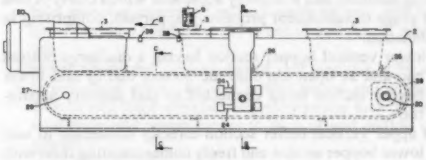
TRAY INDEXING APPARATUS

Vernon F. Mergl, Timonium, Md., assignor to National Instrument Co., Baltimore, Md.

Filed Aug. 16, 1978, Ser. No. 933,983

Int. Cl.³ B65G 43/00

U.S. Cl. 198—341 **6 Claims**



1. A tray indexing apparatus comprising:

means for supporting at least one tray for movement along a predetermined path;

means for moving a supported tray along said predetermined path;

means for stopping movement of said means for moving when said supported tray reaches a first position along said predetermined path;

means for indexing said supported tray along the predetermined path from said first position to a second position; and

means for stopping said indexing means and commencing movement of said means for moving when said supported tray reaches said second position whereby said supported tray is advanced along said predetermined path from said second position, wherein said means for indexing includes reciprocating pusher means for incrementally pushing a supported tray to index the same along the predetermined path from said first position to said second position, said pusher means being eccentrically connected to a rotatable driving means for effecting reciprocation of said pusher means, and wherein said reciprocating pusher means comprises a plurality of pivotably mounted pushing elements yieldably biased in a pushing position and arranged in a direction along said predetermined path so as to successively engage the trailing edge of a rim of a supported tray to push the tray and incrementally advance the same along the predetermined path with reciprocation of the pusher means, and wherein said reciprocating pusher means includes a cover member which extends over a portion of the rim of said tray to retain said tray in a position for engagement by said pushing elements.

4,269,299

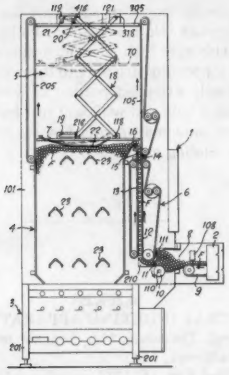
RESERVOIR FOR ROD-LIKE ARTICLES

Hubert C. Goodman, Jr., Midlothian, Va., assignor to CIR-S.p.A.-Divisione SASIB, Bologna, Italy

Filed Apr. 16, 1979, Ser. No. 30,622

Int. Cl.³ B65G *47/26, 37/00*

U.S. Cl. 198—347 **1 Claim**



1. A reservoir for rod-like articles, more particularly a reservoir for filter plugs, said reservoir coupling a continuous filter making machine and a delivery apparatus which conveys said filter plugs to subsequent processing apparatus, comprising in combination:

a lower vertical hopper section having a discharge bottom end and an open top end, the bottom end of said lower hopper section being connected to said delivery apparatus;

an upper vertical buffer section directly connected to said lower hopper section and freely communicating therewith at an intermediate boundary region, said upper vertical buffer section being provided with two opposing sidewalls comprising a pair of vertically disposed endless belts driven so that the inner facing rims of said belts move upwardly, said belts being driven at different speeds;

feed means for feeding a single row of rod-like articles into said reservoir in the vicinity of said intermediate boundary region, said feed means including

a pick-up chamber to which said articles are fed and wherein they are accumulated;

a rotary suction drum for drawing said articles out of said pick-up chamber;

a selecting roller cooperating with said rotary suction drum to obtain a single row of said articles aligned side-by-side;

a pair of vertically disposed endless belts, each having a vertical run in spaced face-to-face relationship with a vertical run of the other belt, said pair of belts elevating said articles from a lower point adjacent the bottom of said buffer section to a higher point adjacent said intermediate boundary region between said buffer and hopper sections, said belts being driven at different speeds whereby the articles engaged between the facing runs of said belts are rolled around their longitudinal axes while being elevated; and

discharge means for delivering said single row of articles from said belts into the reservoir at said intermediate boundary region, said discharge means including;

a pair of parallel spaced-apart plates, said single row of articles being fed between said plates;

a pinch roller adjacent the exit side of one of said plates; and

a sidewall belt adjacent the exit side of the other of said plates and forming a sidewall of said upper buffer section, said pinch roller and said sidewall belt being driven so as to lead and discharge said articles into said reservoir;

level sensing means for sensing the level of said rod-like articles in said upper buffer section, said level sensing means comprising a substantially horizontal cover plate resting on the top level of the articles located within said upper buffer section and being vertically movable in response to variations in the maximum level of said articles;

control means actuated by said level sensing means in response to predetermined maximum and minimum levels of the articles in said buffer section, said control means controlling the operation of said feed means and said delivery apparatus; and

a pantograph linkage coupled to said control means movably suspending said cover plate within said upper buffer section.

4,269,300

METHOD AND APPARATUS FOR SEPARATING HELICAL SPRINGS CLOSED BY KNOTS AT THEIR WINDING ENDS

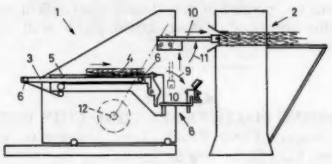
Walter Spuhl, St. Gallen, Switzerland, assignor to Spuhl AG, St. Gallen, Switzerland

Filed Jul. 24, 1979, Ser. No. 60,400

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1978, 2836138

Int. Cl.³ B65G *47/14*

U.S. Cl. 198—379 **5 Claims**



1. A method for separating helical springs for spring frames with knots at the coil ends, said springs being moved in sliding guides by a conveyor belt against a stop while upright and entangled, the method comprising the steps of: grasping the lower coil end of a spring in contact with a stop by a gripping member; moving the stop to an inactive position; pulling the grasped coil end from the sliding guide with the gripping member by an amount substantially equal to the spring wire thickness; returning the stop to an active position; pivoting the spring by substantially 90° into a lying position by the gripping member; grasping a coil end remote from the gripping member by a spring turning member; releasing the spring from the gripping member and returning to the starting position; rotating the spring about its lengthwise axis by the spring turning member until the knot touches a stop; releasing the spring from the spring turning member; grasping the spring by a second gripping member and transporting the spring further.

4,269,301

CONVEYOR BELT SCRAPER SYSTEM

Alfred S. Gibbs, Box 719, R.D. 3, Coopersburg, Pa. 18036

Filed Oct. 22, 1979, Ser. No. 87,094

Int. Cl.³ B65G *45/00*

U.S. Cl. 198—499 **1 Claim**

1. Apparatus for scraping muck and very wet material from the surface of a moving conveyor belt, said apparatus comprising:

(a) three scraper assemblies arranged one behind the other in the direction of travel of the conveyor belt, each scraper assembly comprising:

(i) a resilient, normally flat, scraper blade of length sufficient to extend across the width of the conveyor belt

and having a tapered side with a leading edge adapted to engage the said conveyor belt and scrape the said muck and very wet material therefrom,

(ii) resilient means to force the leading edge of the tapered side of the scraper blade into engagement with, and to flex the scraper blade against, the said moving conveyor belt,

(b) the leading edges of the tapered sides of the scraper blades being forced into engagement with, and the scraper blades being flexed against, the moving conveyor belt with forces decreasing in the direction of travel of the conveyor belt,

(c) said resilient means comprising:

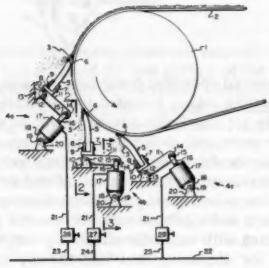
(i) first means to support that side of said scraper blade opposite the tapered side thereof,

(ii) operating lever means having a first end and a second end,

(iii) second means to rotatably support the first end of said operating lever means,

(iv) said first means being secured to said operating lever means adjacent the first end thereof,

(v) an air cylinder having a head end and a bottom end,



(vi) third means rotatably supporting the bottom end of said air cylinder,

(vii) a piston rod in said air cylinder extending through the head end thereof,

(viii) fourth means rotatably mounting the free end of said piston rod to the second end of said operating lever means,

(ix) fifth means to pressurize said air cylinder and extend the piston rod therefrom,

(x) whereby actuation of said fifth means to pressurize said air cylinder operates said operating lever means to force the leading edge of the tapered side of the scraper blade into engagement with, and to flex the scraper blade against, the moving conveyor belt,

(d) the bores of the air cylinders of the resilient means of the three scraper assemblies all being equal.

(e) the lengths of the operating lever means of the resilient means of the three scraper assemblies all being equal,

(f) the ratio of pressures in the air cylinders of the resilient means of the three scraper assemblies, in the direction of travel of the conveyor belt, being approximately 8:6:5.

4,269,302

MODULAR CONVEYOR UNITS AND SPIRAL CONVEYORS CONSTRUCTED THEREFROM

Francis J. Garvey, Newfield, N.J., assignor to Garvey Corporation, Blue Anchor, N.J.

Filed Mar. 23, 1979, Ser. No. 23,293

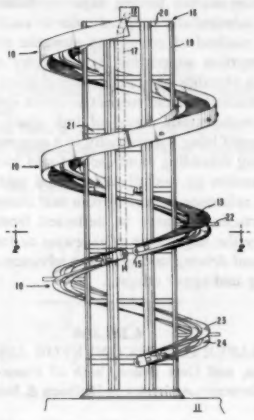
Int. Cl.³ B65G *15/24, 21/18*

U.S. Cl. 198—607 **4 Claims**

1. A spiral conveyor assembly comprising

a plurality of similar modular spiral conveyor units each including a frame having a longitudinal axis, two pairs of parallel tracks supported on said frame defining a spiral path around said axis, a pair of sprockets supported by said frame near the respective ends of the spiral path, and an endless conveyor constructed to follow said tracks and engaging said sprockets;

said modular units being positioned along a common longitudinal axis with one end of the endless conveyor of one module adjacent one end of the endless conveyor of an adjacent module so as to form a continuous conveying path;



a third sprocket supported on each modular unit, said third sprocket being adapted to drive one of said pair of sprockets;

a power means mounted on one of said modular units; and

a power chain driven by said power means and engaging each of said third sprockets whereby power may be delivered from said power means to each of said endless conveyors.

4,269,303

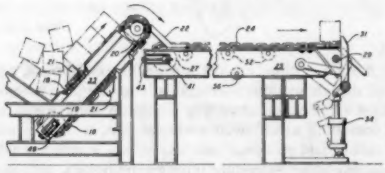
WOOD CONVEYOR APPARATUS

Cyrus J. Cornell, P.O. Box 18, Laceyville, Pa. 18623

Continuation of Ser. No. 601,267, Aug. 4, 1975, abandoned. This application Nov. 29, 1976, Ser. No. 745,579

Int. Cl.³ B65G *15/12, 17/38*

U.S. Cl. 198—688 **16 Claims**



1. Lumber conveyor apparatus for conveying elongated wooden members such as logs, cants, slabs or flitches, comprising, in combination: a plurality of spaced-apart rail means extending parallel to each other; a respective idler roller journalled on each of said rail means adjacent one end of said rail means; a respective drive sprocket journalled on each of said rail means adjacent the other end of each of said rail means; a respective endless chain means trained around the idler roller and the drive sprocket of each of said rail means and including respective upper and lower chain courses, said upper chain courses extending in substantially the same plane in substantially straight lines between their respective idler rollers and drive sprockets; means for rotating said drive sprockets; and a

respective upper roller means journalled on each of said rail means between said upper and lower chain courses and between respective idler rollers and drive sprockets to support the upper course of a respective one of said chain means, the upper course of each of said chain means being supported solely by a respective idler roller, respective drive sprocket, and respective upper roller means, each of said chain means comprising a plurality of interlinked generally-oval links of circular cross-section having adjacent links lying in planes which are substantially perpendicular to each other.

12. The method of conveying elongate articles of lumber which comprises supporting said articles upon the upper courses of a plurality of parallel spaced-apart endless loops of link chain trained around respective drive sprockets and idler rollers to support said loops of link chain with the upper courses thereof lying substantially in a common plane, with at least one dog extending from each of said loops of link chain; applying tension to said chains so that said dogs normally extend in a reference direction from said chains to engage said elongate articles but may be deflected from said reference direction by the imposition of sidewise or torsional loads on said dogs, and driving said chains to advance said dogs repetitively along said upper courses.

4,269,304

SCRAPER CHAIN CONVEYOR ASSEMBLY

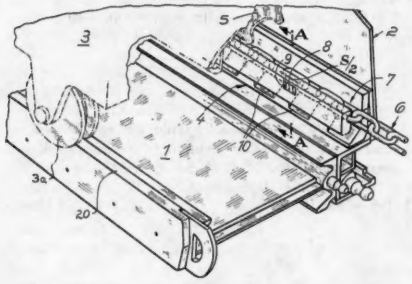
Ernst Braun, and Gert Braun, both of Essen-Heisingen, Fed. Rep. of Germany, assignors to Halbach & Braun, Fed. Rep. of Germany

Filed Jan. 8, 1979, Ser. No. 1,694

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1978, 2829011

Int. Cl.³ G65G *19/18*

U.S. Cl. 198—735 **5 Claims**



1. A scraper chain conveyor assembly, comprising a plurality of trough sections arranged in end-to-end relationship, a bracket side section extending alongside each trough section and including a hollowed sectional part, a mining machine embracing said sectional part and having a sprocket wheel, a round link chain extending through the hollow sectional part and having respective crossing links held by said sectional part in a crossing orientation, said sectional part having an elongated slot overlying said links in said crossing orientation, said sprocket wheel being engaged with said links in said crossing orientation through said slot, said chain being subdivided without any separation of said chain links from each other into chain sections equal in length to the length of said trough section, said chain strand sections being associated with said trough sections in a manner such as to leave a predetermined clearance of motion for the chain strand in a longitudinal direction thereof, said hollowed sectional part including at least one transverse slot extending therethrough transverse to the hollowed portion and a crossbolt extending through said slot and through a chain link having a clearance of motion in the slot which equals the clearance of motion of said chain strand section.

4,269,305

POWERED CONVEYORS

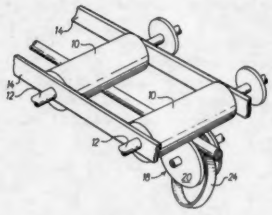
Leslie A. Fryatt, Accrington, England, assignor to J. H. Fenner & Co. Limited, Hull, England

Filed May 15, 1979, Ser. No. 39,375

Claims priority, application United Kingdom, May 31, 1978, 24837/78

Int. Cl.³ B65G *13/06*

U.S. Cl. 198—781 **9 Claims**



1. In a powered conveyor comprising a frame, a plurality of article-supporting rollers mounted in said frame and a drive belt assembly for supplying driving power to propel articles along a conveyor path defined by said rollers, the improvement wherein the drive belt assembly comprises a plurality of guide pulleys supporting the drive belt of said drive belt assembly, at least one of said guide pulleys constituting a unitary belt control pulley, and a hub on said belt control pulley, which hub is provided with means for effectively varying the diameter thereof for displacing said belt radially of said pulley thereby to occupy respective driving and non-driving positions, said means comprising a ring resting loosely on said hub and means to move said ring axially along the hub, said ring being interposable between said driving belt and said hub in order to effect radial displacement of said belt.

4,269,306

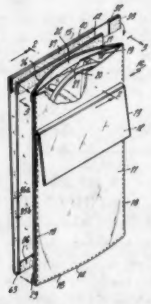
EYEGLASS CASE

Arnold R. Feniger, 80-62 249th St., Bellerose, N.Y. 11426

Filed Dec. 17, 1979, Ser. No. 104,149

Int. Cl.³ A45C *11/04, 15/00*; G02C *13/00*

U.S. Cl. 206—5 **10 Claims**



1. An eyeglass case comprising a case being formed with a first pocket for receiving a pair of folded eyeglasses, a flexible sheet attached to said case so as to form a second pocket for receiving the fingers of the user so that the fingers press against said flexible sheet, and cleansing means for receiving a lens of

the unfolded glasses, said cleaning means being attached adjacent to said flexible sheet, whereby the lens of the unfolded glasses may be engaged by the cleaning means with the fingers pressing the flexible sheet so as to in turn press the cleaning means against the lens.

4,269,307

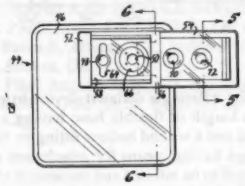
INTRAOCULAR LENS STORAGE ASSEMBLY

Peter G. LaHaye, Diamond Bar, Calif., assignor to Iolab Corporation, San Dimas, Calif.

Filed Aug. 9, 1979, Ser. No. 65,366

Int. Cl.³ B65D *81/18, 25/54;* **A61F** *1/16, 1/18*

U.S. Cl. 206—5.1 **4 Claims**



1. An intraocular lens storage container assembly for permitting the visual inspection of the lens portion of the intraocular lens without removal from the container, comprising:

a transparent outer housing having a pair of walls capable of transmitting light without any substantial distortion;

a support member configured to fit within the transparent outer housing having at least one transmitting area permitting the transmission of light without any substantial distortion and a recess portion of such a dimension and configuration adjacent the transmitting area to receive the haptic portions of an intraocular lens while positioning the lens portion over the area, and

means for securing an intraocular lens within the recess portion.

4,269,308

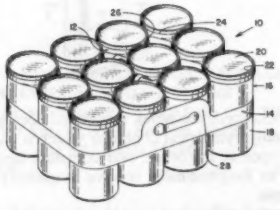
MULTI-UNIT CONTAINER PACKAGE

John R. Platt, Wheaton, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Feb. 14, 1980, Ser. No. 121,617

Int. Cl.³ B65D *71/00, 85/62*

U.S. Cl. 206—150 **7 Claims**



1. A package for a plurality of can-type containers including, in combination, a plurality of containers arranged in an array of rows and ranks, each container including generally cylindrical side walls interconnected to top regions which incorporate radially extending chime means with a predetermined perimeter dimension, a first discrete packaging means comprising a plurality, equal in number to the said plurality of containers, of interconnected, resilient, container encircling bands each of which being adapted to be positioned beneath the chime means of an associated container in resilient engagement therewith, a second packaging means, spaced downwardly from the first packaging means and unconnected thereto, comprising an endless resilient band encircling the array, the band having a predetermined width dimension substantially greater than the thickness of the band, the band configured so that the width dimension extends generally parallel to the axes of the containers, an integral handle means formed outwardly of one segment of an edge of said band, said handle adapted to lie flat against the array when not in use, the combination providing a unitized package with handling means disassociated from the top engaging packaging means.

4,269,309

BOTTLE PACKAGING

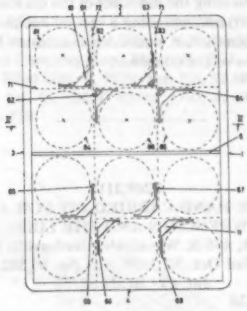
Ulrich H. Prodel, Grunstrasse 13, D-4902 Bad Salzuflen 1, Fed. Rep. of Germany

Filed Nov. 6, 1979, Ser. No. 91,787

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1978, 2848374

Int. Cl.³ B65D *1/24, 25/10*

U.S. Cl. 206—203 **8 Claims**



1. A bottle packing comprising a plastic bottle case and bottle carriers received in said case,

said case having side walls, a bottom and a plurality of spacers projecting up from the bottom in position to provide a spacer in a space between four adjacent bottles, each of said spacers comprising a pair of angular profiles with two flanks disposed at an angle of 90° to one another and with apices of said angular profiles facing one another, the flanks of one angular profile of a pair being parallel to and offset from corresponding flanks of the other angular profile of said pair and offset from imaginary center lines passing between said angular profiles of a pair, and

said carrier having side walls and a bottom with holes in said bottom to receive said spacers when said carrier is in said case, said bottom of the carrier having bridge portions extending between the openings for the two angular profiles of a pair of profiles constituting each of said spacers,

whereby portions of the bottom of said carrier supporting diagonally opposite bottles are connected by said bridge portions.

4,269,310

ASEPTIC CONTAINER AND MANIPULATOR FOR A URETHRAL CATHETER HAVING AN INTEGRAL ANTISEPTIC SOLUTION AND LUBRICANT

Aurelio C. Uson, Valle Del Moro No. 45, Las Lomos, Boadilla Del Monte, Madrid, Spain

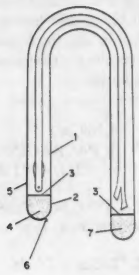
Filed May 14, 1979, Ser. No. 38,558

Int. Cl.³ A61B *19/02;* **A61M** *25/00;* **B65D** *85/00*

U.S. Cl. 206—210 **2 Claims**

1. Aseptic container and manipulator for urethral catheters providing lubricant and antiseptic, characterized by having at one end an enclosure which is separated from the main con-

tainer by a fragile wall element which is disposed transversely to the length of the container; a lubricant contained within said enclosure; a tear strip disposed in a longitudinal side of the



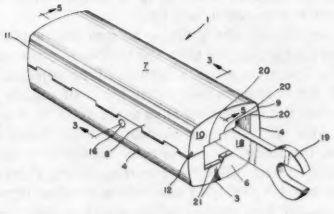
container for releasing the lubricant of the enclosure and opening the container; and including a second enclosure having an antiseptic solution therein, said second enclosure located in one end or the other of the container.

4,269,311

PORTABLE HAND CARRIED KIT FOR A SET OF WRENCHES AND THE LIKE

Jackson E. Rich, 405 S. Wyandotte, Bartlesville, Okla. 74003

Filed Oct. 30, 1979, Ser. No. 89,382
Int. Cl.³ B65D *85/28*
U.S. Cl. 206—234 **3 Claims**



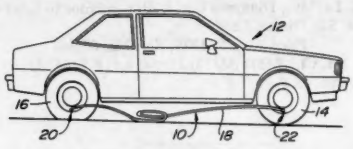
1. In a hand carried kit of the character described, a generally U-shaped elongated hollow body portion with end walls, a generally inverted U-shaped cover hingedly mounted on said body portion and having end walls, one end wall of each of said body portion and cover at the same end being provided with at least two matching openings arranged therein and extending transversely thereof in stepped arrangement, a pivot pin extending transversely of said body portion, a series of elongated generally flat shanks for wrenches and the like having varying sized and shaped heads on one end of each, said shanks being pivotally mounted and closely nsted on said pin so as to be contained and housed therewithin, said stepped openings being recessed in the respective upper and lower edges of said cover and body portion and successively being laterally offset with respect to each other and alignable to provide a series of generally uniform matched stepped openings, said shanks being alignable with said stepped openings through which a selected shank and head may be pivotally moved to project through its aligned stepped opening so as to be engageable therewith and clamped therein upon closing of said cover.

4,269,312

APPARATUS FOR INFLATING A DEFLATED TIRE

Peter W. Bressler, 114 Naudain St., Philadelphia, Pa. 19147

Filed Aug. 6, 1979, Ser. No. 64,221
Int. Cl.³ B65D *85/04, 85/68;* **F16K** *16/20;* **B60C** *23/10*
U.S. Cl. 206—303 **6 Claims**



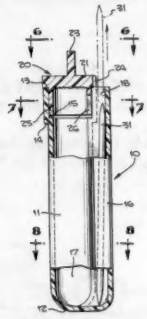
1. Apparatus for inflating a deflated device from a source of air comprising a length of flexible hose having a first hollow fitting on one end and a second hollow fitting on the other end, one of said fittings having means for attachment of the fitting to one of the device to be inflated and the source of pressurized air, said second fitting having an inlet and means adjacent to the inlet for opening a valve in a source of pressurized air, a spring biased check valve in said second fitting for cutting off flow from said inlet to said hose when the pressure entering said inlet is below a predetermined level.

4,269,313

TOOTHPICK HOLDER AND DISPENSER

Forrest D. Smith, P.O. Box 3784, Eureka, Calif. 95556

Filed Sep. 24, 1979, Ser. No. 77,982
Int. Cl.³ B65D *85/24*
U.S. Cl. 206—380 **5 Claims**



1. A pocket type toothpick holder and dispenser comprising:

a generally cylindrical container which is closed at one end and open at the other, said container being of sufficient size to longitudinally receive a quantity of toothpicks therein;

a cap member disposed on said open end of said container in free rotatable relation therewith and including a base part which fits over the end of said container and a depending circular portion which extends within the open end of said container;

said container being radially enlarged at one circumferential portion thereof to provide a discharge compartment running the full length of said container and which is of sufficient size to loosely receive a single toothpick, said discharge compartment being open at the open end of said container; and

the base part of said cap normally at least partially closing the open end of said discharge compartment, said base

part at one circumferential portion having a recess in said base part for communicating with said discharge compartment, said base part of said cap including a radial protuberance thereon for covering the open end of said compartment in a particular rotational position of said cap member; the remaining circumference of said cap, except for said recess, being of about the same diameter as said container;

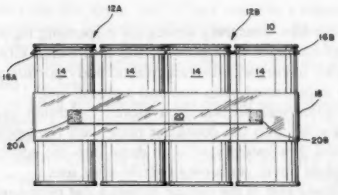
whereby upon rotating said cap to align said recess with said discharge compartment a single toothpick may be withdrawn from said container through the open end of said discharge compartment.

4,269,314

ELASTIC BAND AND HANDLE STRUCTURE FOR FORMING PACKAGES OF GROUPS OF CONTAINERS

Marshall J. Barrash, Atlanta, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Aug. 10, 1979, Ser. No. 65,421
Int. Cl.³ B65D *71/08, 75/56;* **B65B** *61/14;* **B65D** *85/62*
U.S. Cl. 206—428 **10 Claims**



1. In combination with an endless band of elastic material for surrounding a package configuration in a stretched and tensioned condition;

an elongated handle strap of finite length extending over substantially a like finite adjacent surface length of said stretched endless band;

said handle strap having first and second ends secured to said endless band and having the surface area intermediate its ends substantially juxtaposed with the adjacent said surface of said endless band;

said handle strap being in substantially unstretched condition when said endless band is in said stretched and tensioned condition; and

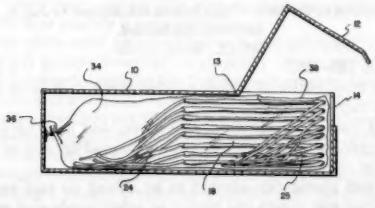
said handle strap being in a relatively loose and non-juxtaposed condition with respect to said adjacent surface of said endless band when the latter is in an unstretched condition.

4,269,315

METHOD AND APPARATUS FOR PACKAGING STERILE SURGICAL MASKS

Elvin L. Boyce, 1058 Buccaneer Dr., Salt Lake City, Utah 84116

Filed Apr. 16, 1979, Ser. No. 30,481
Int. Cl.³ B65D *85/24*
U.S. Cl. 206—438 **11 Claims**



1. A method of packaging surgical masks such that said masks can be dispensed one at a time without entangling the tie strings of the masks, the method comprising the steps of:

stacking said surgical masks one upon the other;

gathering said tie strings into columns at each corner of the stack of said masks;

providing a container having a length that is long enough to permit the tie strings at one end of said stack of masks to be extended toward one end of said container, and a width that is wide enough to permit the tie strings at the other end of said stack to be extended along the sides of said stack toward said end of the container; and

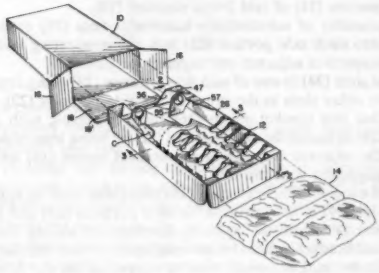
inserting said surgical masks into said container such that said tie strings will trail loosely behind and at the sides of said stack of masks so as to permit each mask to be freely withdrawn from said container without entangling other masks.

4,269,316

ICE CREAM CONE PACKAGE

Lawrence J. Growney, Pearl River, N.Y., assignor to Federal Paper Board Company, Inc., Montvale, N.J.

Filed Nov. 9, 1979, Ser. No. 92,684
Int. Cl.³ B65D *85/62, 5/48, 81/00*
U.S. Cl. 206—499 **10 Claims**

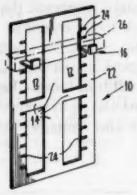


1. In a package assembly for a plurality of articles having a cone shape wherein the articles are arranged in telescoped, stacked relation and enclosed in a tubular outer carton, a cone holding tray formed from a single sheet of paperboard which is cut and scored to provide bottom, side and end wall panels with a top wall panel structure from which side and end wall panels depend, said bottom wall panel comprising a pair of laterally spaced relatively narrow strip portions hingedly connected at one end of the tray to the top edge of the one end wall by narrow hinge panels which extend downwardly of said end wall so as to lie along the inner face of said end wall, said strip portions extending in parallel relation to a wide panel portion at the other end of the tray which has its terminal edge hinged to an edge portion of a flap member which flap member has a hinged connection with the bottom edge of the end wall and is folded against the outer face of the bottom wall, said top wall panel structure comprising a longitudinally extending panel strip portion which is spaced midway between said bottom wall strip portions and which extends from a hinged connection with the top edge of said end wall panel to which said bottom wall strip portions being hingedly connected along their outside edges to a plurality of upstanding cross partition panels of narrow width which are hinged at the top to the associated sidewall, and said bottom wall strip portions being hingedly connected along their inside edges to upstanding cross partition panels which are hinged at the top to said top wall panel strip portion.

4,269,317
DISPENSER SUPPORT

Maurice D. Rubenstein, and Daniel Rubenstein, both of 15 York St., Richmond, Victoria, 3121, Australia

Filed Jul. 6, 1979, Ser. No. 55,753
Claims priority, application Australia, Aug. 16, 1978, PD5518
Int. Cl.[3] A47F 5/08
U.S. Cl. 211—72 3 Claims

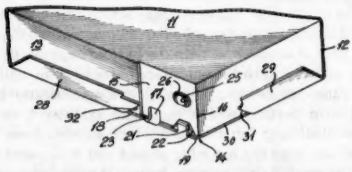


1. A support for retaining dispensers (26), said support comprising a substantially planar frame member (10) wherein:
said frame member (10) is provided with a plurality of substantially rectangular apertures (12) therein,
at least a first of said apertures being arranged adjacent to a respective side portion (22) of said frame member (10) and at least a second of said apertures being opposed to said first aperture and arranged adjacent the other side portion (22) of said frame member (10),
said first and second apertures (12) being separated by a portion (14) of said frame member (10),
a plurality of substantially horizontal slots (24) extending into each side portion (22) and communicating with the respective adjacent rectangular aperture (12),
said slots (24) in one of said side portions (22) being opposed to other slots in the other of the side portions (22), such that first bracket means (16) being engagable with a slot (24) in one of the side portions (22) by being insertable into the adjacent and sliding the bracket means (16) into engagement with the slot,
and a second bracket means (16) engagable with an opposed slot (24) in the other of the side portions (22) and being insertable into the adjacent aperture and sliding the second bracket means (16) into engagement with the slot (24), whereby said dispenser may be supported on the first and second bracket means (16).

4,269,318
SHEET METAL SHELF

Ben Levitt, 65 Downshire Rd., Hampstead, Quebec, and Irving Levitt, 4900 Cote St. Luc Rd., Apt. 1008, Montreal, Quebec, both of Canada

Filed Sep. 7, 1979, Ser. No. 73,435
Int. Cl.[3] A47F 5/00
U.S. Cl. 211—153 5 Claims

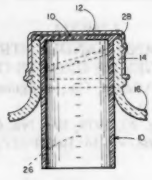


1. A one-piece metal shelf having a top panel, side walls and end walls extending down from the sides and ends respectively of the top panel, and cooperating means on the side and end walls for mechanically joining the side and end walls together at the corners of the shelf, said cooperating means comprising a first tab extending laterally from each end of each of one of the side or end walls, each first tab bent to lie against one of the other of the side or end walls; and a second tab extending from the free side edge, near each end edge, of each of the other of the side or end walls, each second tab bent to lie over a respective first tab to hold it against a respective side or end wall.

4,269,319
FLUID MEASURING CONTAINER CLOSURE CAP

George J. Rubens, 2117 Blackmore Ct., San Diego, Calif. 92109

Filed Jul. 11, 1977, Ser. No. 814,286
Int. Cl.[3] B65D 41/56
U.S. Cl. 215—228 1 Claim



1. A cup-like measuring device for dispensing liquid from a container having a neck portion and a threaded closure cap, said device having a cylindrical plastic body portion provided with an unrestricted open end and a closed end;
said cylindrical portion in a stored condition capable of extending into the container neck with the open end directed downwardly so as to drain into the container any residual liquid remaining therein after use;
said closed end of the device having a flat peripheral shoulder extending outwardly normal from said body which in said stored position extends into the closure cap to form an annular seal when said cap is clamped to the container neck portion;
said plastic shoulder being sufficiently thin to be flexible for threading into and secured within the threaded cap;
at least a portion of said body portion being made of material capable of transmitting light so that in an inverted liquid-receiving position the level of the fluid substance contained therein can be observed through the device;
graduated indicia on said body for measuring the level of fluid in the device to be dispensed from the container; and
said peripheral shoulder has a concentric scribe mark to provide a cutting guide to enable the shoulder to be trimmed off to fit into various size container caps.

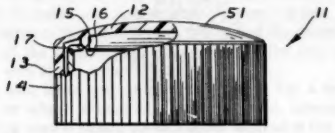
4,269,320
BLOW MOLDED PLASTIC BOTTLE AND ANTI-TAMPER CAP

John J. Virog, Jr., Massapequa Park, and Leo Von Hagel, North Massapequa, both of N.Y., assignors to Maxcap, Inc., New York, N.Y.

Continuation of Ser. No. 921,043, Jun. 30, 1978, Pat. No. 4,180,175, which is a continuation of Ser. No. 770,025, Feb. 18, 1977, Pat. No. 4,098,419. This application Dec. 21, 1979, Ser. No. 106,052
The portion of the term of this patent subsequent to Jul. 4, 1995, has been disclaimed.
Int. Cl.[3] B65D 55/02
U.S. Cl. 215—252 1 Claim

1. A combination of a blow molded plastic milk bottle and a plastic cap comprising:
(a) a neck at the mouth of said bottle, said neck having an upper, inwardly directed circumferential lip, and an exterior cap-holding projection
(b) said plastic cap adapted to be affixed on said neck to cover said mouth and having an exterior side wall and an interior downwardly directed circular plug for engaging said lip, when said cap is affixed on said neck, to form an

anti-leak seal by pressing against said lip, said side wall having an interior projection for engaging said cap-holding projection of said neck, the construction and arrangement of said projections being such that their said engagement retains said cap symmetrically on said neck, said plug having a circular outer surface for engaging said lip, said outer surface being tapered to increase in diameter upwardly and to exert outward and downward force on said lip and a corresponding upward, inward force on said surface when cap is affixed on said neck, the construction and arrangement, including the wall thickness of said cap, being such that when said cap is affixed on said neck said



forces push the upper wall of said cap into a substantially symmetrically domed configuration with the center of said top wall being displaced upward at least about 0.02 inch from its original position with respect to the side wall of said cap, and

(c) cooperating antitamper means on said cap and bottle and including a permanently deformable element, said antitamper means permitting said cap to be moved in one direction to affix said cap on said neck to bring said plug into sealing relation to said lip and then preventing movement in the opposite, cap-removing, direction unless said element is visibly deformed.

4,269,321

PEELABLE BONDED STRUCTURES AND PROCESS FOR PREPARING SAME

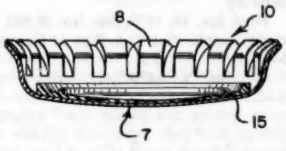
Isao Ichinose, Hiratsuka; Fumio Mori, Yokohama, and Noboru Suzuki, Chigasaki, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Nov. 28, 1978, Ser. No. 964,188

Claims priority, application Japan, Nov. 29, 1977, 52-142219

Int. Cl.³ B65D *41/12*; B32B *15/08*

U.S. Cl. 215—343 **13 Claims**



1. A peelable bonded structure comprising a plurality of articles including at least one metal article bonded together through a composite coating layer, said composite coating layer comprising adjacent first and second coating layers, at least the first coating layer comprising:

(a) an olefin resin (A) modified with a copolymerized carbonyl group-containing ethylenically unsaturated monomer whereby said modified olefin resin contains carbonyl groups at a concentration of between about 0.01 and 200 milliequivalents per 100 g of the modified olefin resin and having a degree of crystallization at least about 50%; and

(b) a coating film-forming base resin (B) at an (A)/(B) weight ratio of between about 0.2/99.8 and 40/60, and having a density greater by about 0.1 than the density of the modified olefin resin;

and said first coating layer having a multi-layer distribution structure with resin concentration gradients in the thickness direction such that the modified olefin resin is distributed predominantly in the portion contiguous to the interface between the first and second coating layers and the base resin is distributed predominantly in the opposite portion, and wherein said plurality of articles have a peel strength of between about 0.05 and 5/kg/cm between the first and second coating layers.

13. A bonded structure according to claim 1 wherein the metal substrate is a crown shell or cap shell, the polyolefin layer is a packing material and the entire structure is a vessel closure.

4,269,322

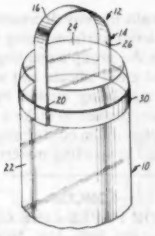
FLEXIBLE BAIL ASSEMBLY

Curtis L. Larson, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 3, 1979, Ser. No. 26,660

Int. Cl.³ B65D *25/28, 63/18*

U.S. Cl. 220—94 R **4 Claims**



1. In combination:

a container having an end and opposite outer side surfaces adjacent said end;

an elongate bail having opposite ends and comprising a polyester web having a thickness in the range of 75 to 225 micrometers (3 to 9 mils), and being prestretched longitudinally at a ratio in the range of about 2:1 to 4.5:1 to uniaxially orient the web longitudinally of the bail;

adhesive coating on portions of said bail adjacent said ends adhering said end portions of said bail to the opposite side surfaces of said containers with a central portion of said bail extending transverse to the end of said container;

said uniaxially-oriented web having sufficient residual stretching ability to cushion shock applied centrally of the bail from the adhesive for attaching the end portions of the bail to a said container and restricting notch sensitivity of said web in a direction transverse to said bail; and

lengths of pressure-sensitive adhesive-coated tape adhered to said container and over the end portions of said bail to restrict contact of other objects with the adhesively-secured end portions of the bail and give the appearance of adding substantially to the structural strength of the combination.

4,269,323

HEAT INSULATED TANK

Nobuyoshi Ito, Tokyo; Hiroshi Morishita, Kawasaki; Minoru Morita, and Takashi Fukano, both of Yokohama, all of Japan, assignors to Nippon Sanso Kabushiki Kaisha, Nishishinbashi, Japan

Filed Oct. 2, 1978, Ser. No. 947,696

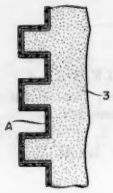
Claims priority, application Japan, Feb. 3, 1978, 53-11281; Feb. 3, 1978, 53-11282

Int. Cl.³ B65D *90/04*

U.S. Cl. 220—423 **1 Claim**

1. A heat insulated tank comprising inner and outer walls having a space therebetween; supporting material interposed in said space between said walls, said supporting material being a

calcium silicate molding hving a xonotlite type crystal structure and a continuous open cell structure; amorphous type silicic acid, calcium compound and water being subjected to heating and pressing to form said calcium silicate molding; the interior facing surface and the exterior facing surface and said supporting material having criss-crossing grooves extending throughout the interior and exterior surfaces to provide a series of spaced apart projecting surfaces for limiting contact with



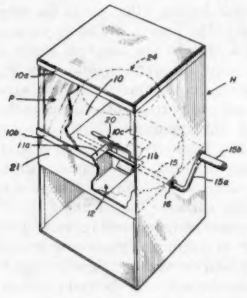
said inner and outer walls thereby decreasing heat transfer, the entire interior and exterior surfaces being impregnated with a solution selected from the group consisting of sodium silicate, potassium silicate, and ethyl silicate and subjected to baking; said supporting material being coated by metallic foil and plastic film and vacuum packed to make a heat insulating unit said metallic foil and plastic film conforming to the interior and exterior surfaces of said supporting material.

4,269,324

DISPENSER FOR PAPER-LIKE CONTAINERS

Leonard P. Hausam, 6801 50th Ave. North, Crystal, Minn. 55428

Filed Jun. 27, 1977, Ser. No. 810,529
Int. Cl.³ B65H *3/00*
U.S. Cl. 221—36 **6 Claims**



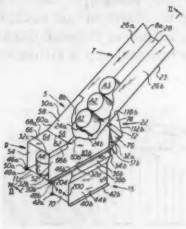
1. A dispenser for flexible paper-like containers comprising:
a storage compartment having means for supporting and positioning a stack of inverted cup-shaped flexible paper-like containers,
said means having a restricted delivery opening formed in the bottom thereof, and smaller than the containers,
a resilient dispensing member mounted for movement downwardly in an arcuate dispensing path extending through said restricted opening from initial gripping engagement position with the underside of the bottom container to a delivery position below said container supporting means, said movement being limited by at least one stop means, and
means for arcuately moving said member through said path from initial engagement position with the bottom container downwardly through said restricted delivery opening to invert the container and thus present the dispensed container in top side up delivery position.

4,269,325

CAN VENDING APPARATUS

Samuel Durham, Beebe, and Max M. Johnston, Russellville, both of Ark., assignors to Polyvend, Inc., Conway, Ark.

Filed May 23, 1979, Ser. No. 41,878
Int. Cl.³ G07F *11/00*
U.S. Cl. 221—194 **31 Claims**



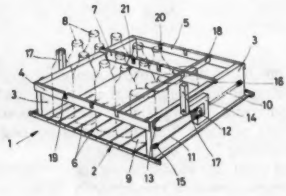
1. A product vending module comprising:
means for delivery of a supply of products to be vended;
queuing means cooperating with said delivery means to controllably permit products supplied by said delivery means to be delivered one at a time to a product vending means;
a product delivery region adjacent said product vending means, said product vending means includes,
slidable product release means adapted to receive the next product to be vended from said queuing means,
means for viewing each product received by said product release means, and
control means adapted to in sequence,
(1) slidably retract said product release means from an initial position dropping the product to be vended into said product delivery region,
(2) return said product release means to said initial position, and
(3) actuate said queuing means to release the next product to be vended to said slidable product release means.

4,269,326

DISPENSING COMPARTMENT, IN PARTICULAR FOR REFRIGERATING UNITS

Klaus Delbrouck, Peter von Flistedenstr. 5, 5000 Köln, Fed. Rep. of Germany

Filed Apr. 10, 1979, Ser. No. 28,802
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1978, 2816547
Int. Cl.³ A47F *1/12, 3/04*
U.S. Cl. 221—227 **10 Claims**



1. In a dispensing compartment for a table-high refrigerating unit accessible only from the removal side, said compartment including a substantial horizontal stand surface extending across the entire width of the compartment and provided for receiving a plurality of identical or similar formed articles, and having lateral guide walls projecting beyond the level of the stand surface as well as a front abutment wall confining the stand surface at the removal side, the improvement wherein
at least one shiftable rear abutment is provided, extending

across the entire width of the stand surface and being shiftable in directions toward and away from the removal side, means for exerting a force on said shiftable rear abutment acting in the direction of the removal side comprising at least one spring engaged at one end thereof with one of the lateral guide walls and at its other end with a loose roll or reversing means, and a tension rope passed about said roll or reversing means in the manner of a tackle, said rope being secured at one end thereof to the respective guide wall with the other end of said rope being passed about a stationary roll or reversing means secured to the guide wall and connected to said shiftable rear abutment;

wherein the spring is a tension spring which is secured at the end of the guide wall remote from the removal side, while the stationary roll or reversing means and the attachment point of the tension rope are located at the end of the guide wall at the removal side;

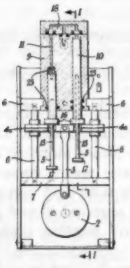
wherein said loose roll or reversing means has a bearing block to which is secured a resetting cord, wherein the resetting cord is passed about a spool secured in the vicinity of the removal side and wherein the spool is rotatable via a drivable drive wheel coupled therewith and having a larger diameter than the spool.

4,269,327

DEVICE FOR CARRYING OUT HIGH PRECISION DILUTIONS AND DOSAGES OF LIQUIDS, PARTICULARLY BIOLOGICAL LIQUIDS

Henry H. Welch, No. 437, Via Nomentana, 00162 Rome, Italy

Filed May 24, 1978, Ser. No. 908,991
Int. Cl.³ G01F *11/06*
U.S. Cl. 222—135 **4 Claims**



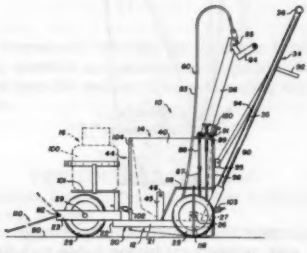
1. An apparatus for delivering precise dosages of biological liquids comprising an interchangeable block member, a support frame member releasably supporting said block member and interengaging track means and groove means on said members for slidably interconnecting said members along a given direction, said support frame member including: upper support means comprising one of said track means and groove means; two parallel uprights depending from said upper support means; a reciprocable cross bar guidably engaging said parallel uprights and movable in a direction generally perpendicular to said given direction, said cross bar having at least one laterally outwardly opening recess; and means for moving said cross bar toward and away from said block member, said interchangeable block member including: at least one chamber; a piston slidably diposed in said chamber and having a threaded bore therein; a threaded stem depending from the piston, said stem rotatably engaged in said bore and disposed to be received in the recess in said cross bar when the block member is connected with said support frame member; abutment means on said stem disposed to contact the cross bar during a portion of said movement away from the block member; an abutment member on said piston disposed to contact the cross bar during a portion of said movement toward the block member; and a set of ducts and valves in said block member for interconnecting a drawing reservoir and a delivery duct with said chamber, whereby, upon reciprocation of said cross bar, said piston is partially withdrawn from the chamber by said contact of the cross bar with said abutment means on the stem and said piston is partially driven into said chamber by said contact of the cross bar with said abutment member so that said liquid is displaced from the reservoir to the delivery duct, and whereby the quantity of liquid displaced is determined by the rotatably adjustable length of the stem between the abutment means and said abutment member.

4,269,328

LINE MARKING MACHINE WITH HEATERS

Derek A. Franklyn, 12943-54A Ave., Surrey, British Columbia, Canada

Filed Mar. 5, 1979, Ser. No. 17,265
Claims priority, application Canada, Mar. 13, 1978, 298807
Int. Cl.³ B67D *5/62*
U.S. Cl. 222—146 H **3 Claims**



1. A line marking machine for applying lines of demarkation to a road surface or the like comprising:

a carriage adapted to be moved along said road surface;

a hopper mounted on the carriage and adapted to contain a quantity of marking fluid, said hopper having a sloping bottom and adjoining walls, said adjoining walls including a rear wall spaced from said bottom to define a discharge opening through which the marking fluid can flow onto the road surface, said hopper further having parallel lower edge portions disposed to the rear of said discharge opening in a position to limit the width of a line formed as the marking fluid flows onto the road surface;

gate means mounted on the hopper for opening and closing said discharge opening;

operating means connected to said gate means for selectively positioning said gate means whereby to control the flow of marking fluid through said discharge opening;

a casing having walls spaced from said bottom and said rear wall of said hopper to form a first heating chamber adjacent said bottom, and a second heating chamber adjacent said rear wall and said gate means; and

heating means for heating the space within said heating chambers for maintaining the marking fluid located within said hopper and the marking fluid passing through said discharge opening within a predetermined temperature range.

4,269,329

PLANT-WATERING DEVICE

Terry M. Keller, 85 Estabrook #115, San Leandro, Calif. 94577

Continuation-in-part of Ser. No. 907,581, May 19, 1978, abandoned. This application Nov. 15, 1979, Ser. No. 94,578
Int. Cl.³ B67D *5/44*
U.S. Cl. 222—333 **3 Claims**

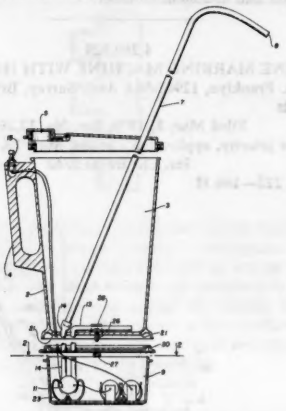
1. A plant watering device designed for watering overhead normally out-of-reach plants comprising:

a housing providing a water reservoir and having a handle

for manual portability and support in a normally upright position of use and having a liquid fill opening for said reservoir, said housing having a bottom wall;

a rigid self-supporting conduit carried by said housing and extending upwardly therefrom and having a distal, normally upper discharge end extending the vertical reach of the user;

a motor compartment positioned at the bottom of said housing, said compartment having a normally top wall secured to the bottom wall of said housing and shielding said



compartment from water escaping through said bottom wall, said compartment having a side wall demountably secured to said top wall;

an electric motor and pump connected thereto and driven thereby and a battery mounted in said compartment, said pump having an inlet connected to said reservoir and an outlet connected to said conduit; and

a manually actuatable electric switch mounted on said housing in position for conjoint manual engagement of said handle and actuation of said switch and being electrically connected to said battery and said motor.

4,269,330

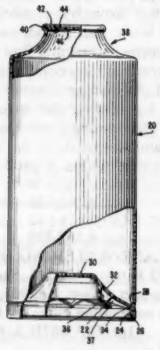
CARTRIDGE TYPE SAUCE EXTRUDER

Terry J. Johnson, One E. Schiller, Chicago, Ill. 60611

Filed Oct. 11, 1979, Ser. No. 83,620

Int. Cl.³ B67D *5/42*

U.S. Cl. 222—386 **19 Claims**



1. In a dispensing cartridge assembly that includes a hollow, generally cylindrical cartridge body for holding the product to be discharged, and a plunger unit axially slidably received within the body, the improvement wherein said body includes a first axial length section of substantially uniform inside diameter terminating at one end of the body, and a second axial length section extending from the first length section to the other end of the body; said second axial length section including a generally cone-shaped neck portion having its minor inner diameter region adjacent said other end and having a central orifice opening in alignment with the axis of the body, said plunger unit comprising a body that includes a cylindrically shaped first portion of substantially axially uniform outside diameter that is substantially equal to said uniform inside diameter, said first portion terminating at one end of the unit, and a generally cone-shaped portion extending from said first portion and terminating at the other end of the unit, and wherein said first axial length section of the cartridge body includes axially spaced, inwardly projecting annular bulges adjacent said one end thereof to engage said first portion of the plunger unit therebetween in snap-fit relation.

4,269,331

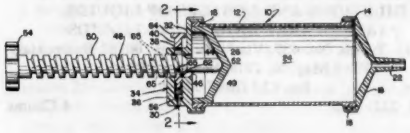
METERED DISPENSING DEVICE

John D. Watson, 906 E. Harmony La., Fullerton, Calif. 92631

Filed Feb. 15, 1980, Ser. No. 121,839

Int. Cl.³ G01F *11/00*

U.S. Cl. 222—390 **2 Claims**



1. A metered dispensing device for thixotropic products, comprising:

a tubular housing defining a chamber having front and rear open ends;

a discharge nozzle removably secured to the rear open end;

a cap member removably secured to the front end;

a rotational release means mounted to said cap member;

said rotational release means comprising a guide member formed integrally with said cap member, and a control member slidably received in said guide member;

wherein said control member comprises a body member having a central opening therein and an inwardly projecting tooth member disposed in said opening;

said tooth also defining a latching pin;

a plurality of selectively spaced detents formed in said shaft to receive said latching pin, wherein the placement of said detents determines the amount of product to be discharged from said chamber; and

a biasing spring positioned between said guide member and said control member, to provide a controlled engagement between said control member and said shaft member;

a threaded shaft adapted to be removably mounted in said rotational release means for selective rotation thereof; and

a piston head disposed in said chamber for longitudinal movement therein, and positioned for engagement with said shaft.

4,269,332

CONTAINER WITH TUBE CLOSURE ASSEMBLY

John L. Conn, P.O. Box 4501-Station B, Spartanburg, S.C. 29303

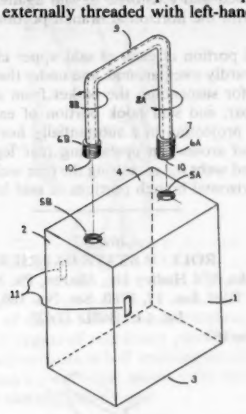
Filed Feb. 9, 1979, Ser. No. 11,152

Int. Cl.³ B67D *5/06*

U.S. Cl. 222—475 **1 Claim**

1. A hollow container that is rectangular in shape and having two side walls, two smaller end walls, a bottom, a top, wherein said top surface of the container has two internally threaded

openings located near the smaller end walls, the one left opening having left-handed internal threads and the other opposite right opening having right-handed internal threads and two opposite indented finger gripping areas located on the larger exterior side walls near the smaller left end wall, in combination with a flexible hollow closure tube wherein said tube is of a greater length than the distance between said two top surface openings, the circumference of the tube's externally threaded ends are equal to that of the two top surface openings, the tube's left end is externally threaded with left-handed threads



and the other right tube end having externally threaded right-handed threads wherein the tube's left externally threaded end and the container's left internally threaded opening are of like threads and wherein the tube's right externally threaded end and the container's right internally threaded opening are of like threads, the tube's right externally threaded end area has a greater length-wise threaded area than that of the other left end, the central non-threaded area of the tube is of a smaller circumference than the two threaded end areas and wherein said tube and threaded end portions are of one integral piece.

4,269,333

PINCH VALVE FOR A CLOSED CONTAINER

Kiyoshi Nakai, Fujieda; Hidenobu Miyajima, Fukuroi, and Syuji Harada, Kakegawa, all of Japan, assignors to Asahi Malleablt Iron, Co., Ltd. and Nippon Light Metal Co., Ltd., both of Tokyo, Japan

Filed Jul. 31, 1978, Ser. No. 929,460

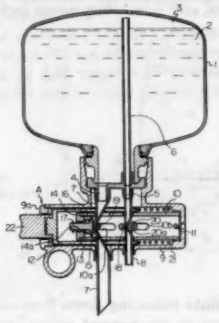
Claims priority, application Japan, Aug. 8, 1977, 52-105940[U]; Aug. 12, 1977, 52-96097; Aug. 12, 1977, 52-107120[U]; **Aug. 12, 1977, 52-107121[U]**

Int. Cl.[3] **B67D** *3/00*

U.S. Cl. 222—484 **5 Claims**

1. Device for use with a closed container for dispensing beer contained in said closed container, comprising a resilient discharge tube connected to the lower portion of said closed container for discharging beer contained therein outwardly therefrom, a resilient air inlet tube provided at the lower portion of said closed container adjacent to said resilient discharge tube, an air communicating tube in communication with said resilient inlet tube and also communicating said inlet tube with the space within said container above the level of the beer therein, and a pinch valve means arranged at the lower portion of said container for opening and closing both said resilient discharge and inlet tubes in coupled relationship with each other;

wherein the pinch valve comprises a casing, a stationary cylindrical member secured to the casing, a movable cylindrical member slidably fitted on the stationary cylindrical member, said resilient tubes passing transversely through said cylindrical members, supporting elements being mounted on the stationary member for supporting respectively one of the side surfaces of respective resilient tubes, and pressing elements being mounted on the movable member for pressing respectively the other of the side surfaces of respective tubes against said supporting ele-



ments respectively whereby the distances between supporting elements and pressing elements are changed to close or open the resilient tubes by actuating the movable member.

4,269,334

PRINTING AND PLEATING

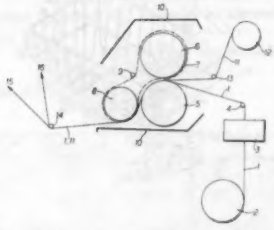
Edward Chodosh, London, England, assignor to Roldwest Limited, London, England

Filed Mar. 21, 1979, Ser. No. 22,508

Claims priority, application United Kingdom, Mar. 22, 1978, 11518/78; Dec. 12, 1978, 48152/78; Dec. 22, 1978, 49828/78

Int. Cl.[3] **D06P** *3/24;* **A41H** *33/00*

U.S. Cl. 223—28 **17 Claims**



1. A method of printing and pleating a fabric which comprises folding the fabric into a pleat pattern and then simultaneously forming the pleat and printing the fabric by passing the fabric together with a print paper in contact with at least a portion thereof through a zone heated to a temperature sufficient to cause the print colour and/or pattern to be transferred to the fabric while the folds in the fabric are simultaneously made into permanent pleats.

4,269,335

MOTORCYCLE LUGGAGE RACK

Claude LaRose, Duvernay Laval, and Jacques Gagnon, St-Lambert, both of Canada, assignors to Triangle Accessoires de Motocyclettes Ltee., St. Leonard, Canada

Filed Mar. 18, 1980, Ser. No. 131,541

Int. Cl.[3] **B62J** *7/04*

U.S. Cl. 224—31 **6 Claims**

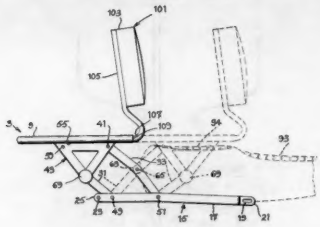
1. A luggage rack for a motorcycle, comprising:

platform means for carrying luggage;

support means spaced below the platform means for supporting the platform;

means on the support means for connecting the support means to a motorcycle;

means for movably connecting the platform means to the support means so that the platform means can move between a rear position and forward position relative to the support means, said connecting means including a pair of



spaced apart links extending down from each side of the platform means to the support means, each link being pivotably connected to the platform means and to the support means; and

means for locking the platform means in either position relative to the support means.

4,269,336

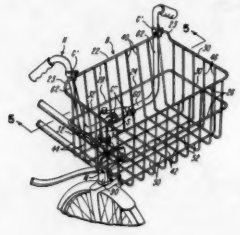
MOUNTING MEANS FOR BICYCLE BASKETS

Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Co., Inc., Maysville, Ky.

Filed Feb. 9, 1979, Ser. No. 10,673

Int. Cl.³ B62J *7/06*

U.S. Cl. 224—36 **1 Claim**



1. A wire basket structure for mounting on a bicycle handlebar having opposed horizontal branch portions and upwardly extending risers, said branch portions and risers being disposed substantially in a single plane, said basket including upper front, rear, and side edges defined by a circumferential top frame, an intermediate portion defined by a circumferential center frame, and two sets of U-shaped webs the upstanding legs of which are fixedly secured to said top and center frames for defining the upstanding front, rear, and side walls of the basket and wherein the lower legs of said webs define the bottom of the basket;

means anchoring the top frame of the basket to each of said handlebar risers in any one of a plurality of different vertical positions of said basket relative to the handlebar risers;

means anchoring portions of the upstanding rear leg of one of said sets of U-shaped webs to the horizontal branch portions of the handlebar in any one of plurality of different vertical positions of said basket relative to said horizontal branch portions of the handlebar;

said first mentioned anchoring means comprising a pair of upper clamps secured to and carried by the handlebar risers and including a projecting hook portion in which the top frame of the basket is received and anchored to and against relative movement with a riser;

said second mentioned anchoring means being substantially identical to said first mentioned anchoring means and comprising a pair of lower clamps secured to and carried by the horizontal branch portions of the handlebar and including a projecting hook portion in which the rear leg of said one of said sets of said upstanding U-shaped webs is received and anchored to and against relative movement with the horizontal branch portions of the handlebar,

said hook portion of each of said upper clamps projecting downwardly over, around, and under the top frame of the basket for suspending the basket from said risers of the handlebar, and said hook portion of each of the lower clamps projecting in a substantially horizontal direction over and around an upstanding rear leg of one of said U-shaped webs for anchoring the rear wall of the basket to said horizontal branch portions of said handlebar.

4,269,337

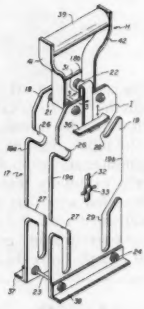
ROLLER SKATE CARRIER

Frank Sobotka, 974 Hadley Dr., Sharon, Pa. 16146

Filed Jun. 17, 1980, Ser. No. 160,321

Int. Cl.³ B65D *71/00*

U.S. Cl. 294—163 **10 Claims**



1. A carrier for a pair of roller skates of the type including a boot and a pair of wheel and axle assemblies mounted in spaced relationship on the sole of said boot comprising, in combination, a frame, said frame being provided with recess means on each side arranged in vertically spaced relationship corresponding to the spacing of said wheel and axle assemblies, said recess means on each frame side being adapted to supportingly engage the wheel and axle assembly on a respective one of said boots to support said skates in oppositely disposed relationship on the sides of said frame and releasable locking means on said frame engageable with one of said wheel and axle assemblies on each of said boots for retaining said wheel and axle assemblies in said recess means.

4,269,338

BALL HOLDER

Burton F. Sichel, 23 Evergreen Ave., Livingston, N.J. 07039

Continuation-in-part of Ser. No. 871,543, Jan. 23, 1978, abandoned. This application Nov. 16, 1979, Ser. No. 95,060

Int. Cl.³ A63B *47/00, 49/00*

U.S. Cl. 224—242 **28 Claims**

1. A ball holder carried on the person of a user and capable of retaining one or two balls comprising:

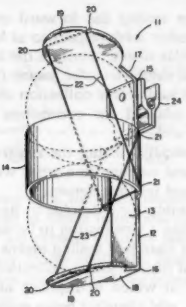
(a) a vertical strut member;

(b) an upper planar ball retaining member extending outwardly from the upper edge of said strut member;

(c) a lower planar ball retaining member extending outwardly from the lower edge of said strut member;

(d) a cylindrical ball retaining member joined to the central portion of said strut member and lying between said upper and lower planar ball retaining members;

(e) an upper pair of elastic ball retaining members extending from the outer region of said upper planar ball retaining member to said cylindrical ball retaining member;



(f) a lower pair of elastic ball retaining members extending from the outer region of said lower planar ball retaining member to said cylindrical ball retaining member; and

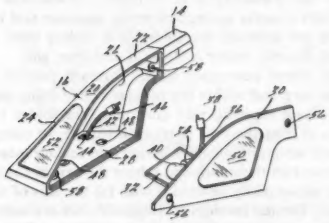
(g) means located on said strut member for fastening said holder to the clothing of said user.

4,269,339

LUGGAGE CARRIER WITH ILLUMINATING MEANS

John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236

Filed Apr. 27, 1979, Ser. No. 33,897
Int. Cl.³ B60R 9/04
U.S. Cl. 224—325 **7 Claims**



1. A luggage carrier mounted on a substantially horizontal surface of an automotive vehicle, said carrier including spaced side members and spaced cross members, stanchions located at at least two corners of the carrier securing the carrier to the vehicle surface, an interior area formed between said stanchions, and illuminating means provided in at least one of said stanchions to illuminate said interior area.

4,269,340

LOAD BEARING CROSS-SLAT

Ben C. Kowalski, Troy; Daniel J. Kowalski, Ortonville, and Douglas J. Ferguson, Davisburg, all of Mich., assignors to Four Star Corporation, Troy, Mich.

Filed Sep. 28, 1979, Ser. No. 79,943
Int. Cl.³ B60R 7/00
U.S. Cl. 224—326 **4 Claims**

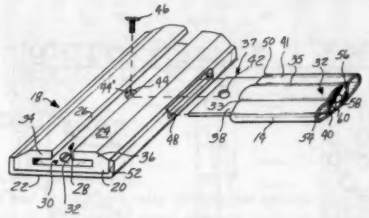
1. A load bearing assembly for an automotive vehicle mounted carrier of the type including a pair of spaced track members fixed to a vehicle surface and at least one cross-slat supported between said track members, the improvement wherein

(a) each track member includes

(1) a base portion adapted to be supported upon said vehicle surface,

(2) inner and outer end walls projecting upwardly from said base portion,

(3) upper wall portions projecting inwardly from said end walls and vertically spaced above said base portion, the inner ends of said upper wall portions being transversely spaced whereby the base portion, the end walls



and said upper walls define an inverted T-type slot extending longitudinally of each track member,

(4) a transverse opening formed through each inner end wall;

(b) said cross-slat including tongue-like elements formed at each end thereof, said tongue-like elements respectively projecting through said inner wall openings and extending transversely of said track slot; and

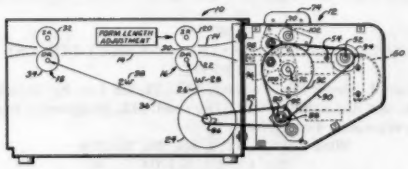
(c) common means for non-movably fastening said each tongue-like element and its associated track member to said vehicle surface.

4,269,341

STATIONERY BURSTER

Peter R. Polko, Palatine, Ill., assignor to Uarco Incorporated, Barrington, Ill.

Filed Nov. 5, 1979, Ser. No. 91,336
Int. Cl.³ B26F 3/02
U.S. Cl. 225—94 **4 Claims**



1. In a stationary burster having substantially abutting, rotatably mounted, first and second infeed rolls, substantially abutting, rotatably mounted, first and second outfeed rolls spaced from said infeed rolls along a path of stationery travel, a relief on the peripheral surface of said first infeed roll, a rotatable drive for the second infeed and second outfeed roll such that the peripheral speed of the second outfeed roll will be greater than that of the second infeed roll and said first rolls will be idler rolls with respect to their respective second rolls, and means for adjusting the spacing between said infeed rolls and said outfeed rolls to accommodate stationery of differing form lengths; the improvement comprising:

a pinfeed tractor device for positively engaging stationery and located ahead of said infeed rolls along said path of stationery travel, a drive for said tractor device such that said tractor device would drive stationery along said path at a speed in the range from just less to 10% less than the speed the stationery would travel along said path if posi-

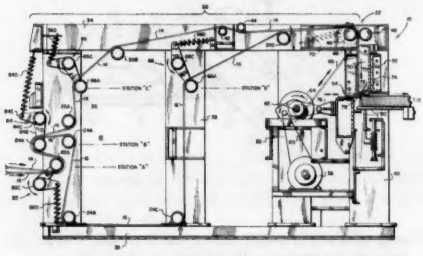
tively advanced solely by said second infeed roll; and clutch means interconnecting said tractor device and said tractor drive.

4,269,342

RESILIENTLY STABILIZED WEB MOVEMENT FOR HONEYCOMB MACHINE

Daniel H. Ellinor, 6820 Briar Cove, Dallas, Tex. 75240

Division of Ser. No. 20,759, Mar. 15, 1979, Pat. No. 4,229,243.
This application Oct. 1, 1979, Ser. No. 80,445
Int. Cl.[3] G03B *1/28;* B65H *17/94*
U.S. Cl. 226—60 **5 Claims**



1. Apparatus for intermittently advancing a length of web material from a supply roll to a processing station comprising:

a frame;

web drive apparatus mounted on the frame including a pair of index rollers for engaging the web, pulling it from the supply roll and feeding it to the processing station in response to rotation of the index rollers;

drive control means coupled to the web drive apparatus for alternately starting and stopping rotation of the index rollers during successive feeding and processing cycles, respectively; and,

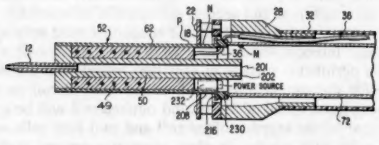
resilient means mounted on the frame intermediate the supply roll and web drive apparatus for yieldably engaging the web and thrusting it out of its plane of advance to continuously maintain the web under tension loading as the web is alternately advanced and halted during the successive feeding and processing cycles, respectively.

4,269,343

DESOLDERER AND HEATER ASSEMBLY FOR USE THEREWITH

William J. Siegel, Silver Spring, Md.; Walter Lee, Springfield, Va., and Alexander J. Vella, Derwood, Md., assignors to Pace Incorporated, Laurel, Md.

Filed Aug. 18, 1978, Ser. No. 934,976
Int. Cl.[3] B23K *3/04*
U.S. Cl. 228—20 **49 Claims**



1. A desolderer comprising

a tubular tip adapted for contacting a termination to be desoldered;

a heating element for heating said tip to a solder melting temperature;

a solder collection chamber;

a tubular solder transfer means for transferring solder from said tip to said solder collection chamber, said heating element heating said solder transfer means to said solder melting temperature;

a tubular sleeve within which is disposed said heating element and said solder transfer means;

said solder collection chamber being adapted for connection to a vacuum source so that a vacuum is established in said tip, said solder transfer tube and said solder collection chamber;

sealing means for sealing the forward end of said solder collection chamber with respect to at least the rear portion of the tubular sleeve to ensure the application of said vacuum to said solder transfer means from said vacuum source through said solder collection chamber;

electrical wires adapted for connection to an electrical power source; and

means for hermetically passing the electrical wires from a point outside said vacuum to a point within said vacuum and hence to said heating element.

39. A heater assembly for a desolderer having a tubular tip adapted for contacting a termination to be desoldered, a tubular solder collection chamber, sealing means for vacuum sealing the forward end of said solder collection chamber, and a tubular handle within which is disposed said tubular solder collection chamber, said chamber being spaced from and substantially coaxial with the handle, said heater assembly comprising

a heating element for heating said tip to a solder melting temperature; and

a tubular core upon which said heating element is mounted, said tip being disposed at least within the forward portion of the tubular core;

a tubular solder transfer means connected to the rear portion of said tubular core and extending into the solder collection chamber;

a seal mounting means providing a sealing surface for said sealing means for the forward end of the solder collection chamber, said sealing surface being spaced and separate from said tubular handle and being removed from said solder transfer means and the thermal characteristics of said seal mounting means being such that the sealing means can be maintained at a temperature less than that of the solder transfer means to thereby promote seal longevity and yet maintain the solder in a molten state as it is ejected into the solder collection chamber; and

a tubular sleeve connected to the forward portion of the tubular core and within the tubular sleeve being disposed said heating element, said core and said solder transfer means, at least the rear portion of the sleeve comprising said seal mounting means wherein said sealing means is in direct contact therewith and where the axis of the tubular sleeve substantially coincides with (a) the axis of the passageway formed through said tip, said core and said solder transfer means and (b) the axes of the handle and the solder collection chamber, so that a vacuum is established in said tip, said core, said solder transfer means and said solder collection chamber in response to said solder collection chamber being connected to a vacuum source.

4,269,344

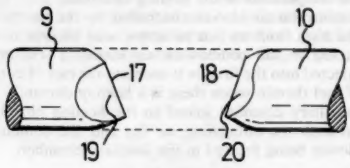
PRESSURE WELDING METAL BARS TOGETHER

Rene Vervliet, Hemiksem, Belgium, assignor to Societe Franco-Belge des Laminoirs et Trefileries d'Anvers "Lamitref", Hemiksem, Belgium

Continuation-in-part of Ser. No. 907,743, May 19, 1978, abandoned. This application Nov. 7, 1978, Ser. No. 958,577
Claims priority, application United Kingdom, May 24, 1977, 21907/77
Int. Cl.[3] B23K *20/02;* B21C *1/18;* B21B *15/00*
U.S. Cl. 228—125 **12 Claims**

1. In a process for continuously producing copper wire rods in an on-line plant, which process comprises the steps of passing a number of wire bars at hot rolling temperature one by one through a rolling mill for delivering one after another a num-

ber of copper bars, butt welding under pressure the leading end of each copper bar leaving said rolling mill to the trailing end of a continuous string formed by the preceding bars which are already welded to each other, removing at the weld the material which projects beyond the contour of the string, and continuously rolling said continuous string through a continuous



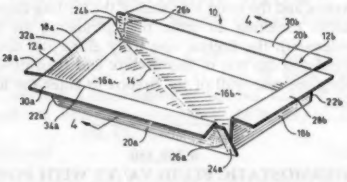
rolling mill into wire rods, the improvement which comprises using a welding step in which both ends to be welded have a wedge-shape and are pressed together with the edges of the wedges in crossing relationship, the interface being below melting temperature, and the pressing being conducted in one single pressing step.

4,269,345

NESTABLE MOULDED CONTAINER

Roy W. Emery, 1 Donino Ct., Toronto, Ontario, Canada (M4N 2H6)

Filed Aug. 10, 1979, Ser. No. 65,462
Int. Cl.³ B65D *1/18*
U.S. Cl. 229—2.5 R **1 Claim**



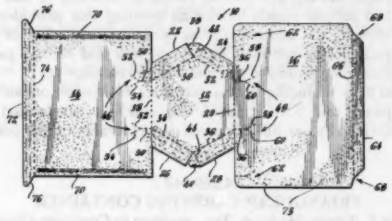
1. A rectangular integrally moulded container comprising, two container portions, each container portion consisting of a triangular bottom wall segment and two side walls formed in upstanding relationship with respect to the bottom wall segment and joined at an upstanding rigid corner, the bottom wall segments of the container portions being joined along a hinge line which extends diagonally between the two other corners of the container across the bottom thereof; a tab integrally connected to one of the side walls of the container at each of said other corners and bendable to overlie and join the side wall of the opposite container portion at that corner; and top wall members hingedly connected to side walls of both segments and hingeable to overlie the container, the container having a first configuration in which it is moulded and in which the bottom wall segments are mutually inclined to dispose the side walls of the two container portions in a divergent relationship to facilitate removal from the mould and subsequent nesting of containers, and having a second configuration for a set-up container in which the bottom wall segments are coplanar and the side walls of the two portions meet and are joined by the tabs at the ends of the hinge line to make said other corners rigid.

4,269,346

ROUND ICE CREAM CARTON

Daniel P. Dutcher, Woodbury, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Oct. 26, 1979, Ser. No. 88,413
Int. Cl.³ B65D *3/00, 3/04*
U.S. Cl. 229—21 **15 Claims**



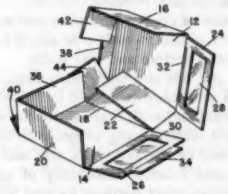
1. A blank comprising:
first and second generally rectangular spaced apart panels;
a polygonally shaped panel disposed between said first and second panels and hingedly connected to the first edge of each of said latter mentioned panels by a fold line;
first and second strips respectively hingedly connected by corresponding fold lines along a second edge of said first and second panels opposite said first edges and distal from said polygonally shaped panel,
said first strip including an extension flap on each of the opposite extremities thereof, each of said extension flaps extending outwardly away from said first panel and beyond corresponding third and fourth edges of said first panel,
said second strip including an edge on each of the opposite extremities thereof spaced inwardly away from the corresponding third and fourth edges of said second panel.

4,269,347

END TAB FILE FOLDER STORAGE FILE

Donald R. Cavan, Jr., 4910 Crestland, La Mesa, Calif. 92041

Continuation-in-part of Ser. No. 837,610, Sep. 28, 1977, abandoned. This application Jun. 14, 1978, Ser. No. 915,171
Int. Cl.³ B65D *5/22*
U.S. Cl. 229—33 **6 Claims**



1. A storage carton blank made from foldable sheet material, said blank adapted to be folded into a rigid sided container having a front opening, said blank comprising:
a sheet of substantially rigid foldable material cut and scored to define a plurality of interconnected panels including a top panel for defining a top, a bottom panel for defining a bottom, a plurality of side panels for defining reinforced sides, a back panel for defining a back and a plurality of front panels for defining an openable front,
said top and bottom panels are each generally square in configuration,
said side panels comprise a pair of generally rectangular

panels adapted to overlap for defining each reinforced side,

one of said pair of side panels is formed of an intermediate panel between the top and bottom panel and an extension of said intermediate panel that is foldable to overlap the intermediate panel, and

said front panels consist of first and second panels extending from said top and bottom panels at least one of said first and second panels having an opening that provides for viewing the contents of the container, the other of said pair of side panels is formed of first and second panels extending from the top and bottom panels,

said back including panels extending from each of said top panel, said bottom panel, and said side panels, and are defined by one full size panel and a plurality of half panels.

4,269,348

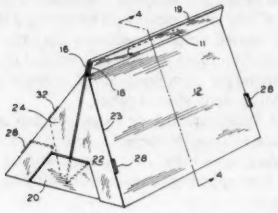
TRIANGULAR CARRYING CONTAINER

Harry E. Young, Houston, Tex., assignor to Container Corporation of America, Chicago, Ill.

Filed Oct. 29, 1979, Ser. No. 89,046

Int. Cl.³ B65D *5/46, 25/22*

U.S. Cl. 229—52 B **2 Claims**



1. An integral handle, self-locking, carrying container requiring no additional fastening means and being formed from a unitary blank of foldable paperboard or the like, comprising:

(a) a bottom wall;

(b) a pair of upwardly converging first and second side walls having their lower edges foldably joined to opposed side edges of said bottom wall, and forming with said bottom wall a tubular construction which is generally triangular in cross-section;

(c) said side walls having foldably joined to their upper edges integral handle sections adapted to be folded together in interlocking relation;

(d) opposed pairs of center, first side, and second side end walls foldably joined at their side edges to adjacent end edges of related bottom and side walls;

(e) said center and side end walls being disposed in overlapping relation with each other and in interlocking relation with each other and with said side walls; and

(f) said side end walls having projections received within openings in said center end walls, and said side end walls having portions located outboardly of said center end walls and having other portions located inboardly of said center end walls.

4,269,349

SOLID FUEL FURNACE

Bunyan B. Cagle, 1700 Towson Ave., Fort Smith, Ark. 72901

Continuation-in-part of Ser. No. 813,962, Jul. 8, 1977, Pat. No. 4,149,671. This application Mar. 8, 1979, Ser. No. 18,669

Int. Cl.³ F23N *1/02*

U.S. Cl. 236—11 **2 Claims**

1. A solid fuel furnace comprising

a firebox for containing a fire therein,

a combustion air manifold for supplying air to the firebox,

a heating chamber surrounding the firebox,

a circulating fan to force air through the heating chamber and around the firebox to circulate heated air to a room,

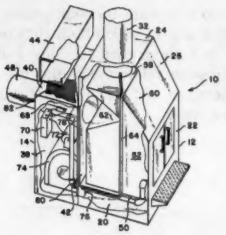
a normally open limit switch responsive to temperature within the heating chamber for controlling said circulating fan,

a thermostat responsive to temperature of the room,

a normally closed high thermal limit switch responsive to the temperature in the heating chamber,

a combustion air blower controlled by the thermostat and the high limit switch in series, said blower being connected to the combustion air manifold whereby air is injected into the firebox to increase the rate of combustion of fuel therein when there is a heating demand,

an auxiliary chamber joined to the heating chamber by a firewall, the circulating air fan and the combustion air blower being located in the auxiliary chamber,



wherein the firebox has a firebox base and the furnace has a furnace base with the firebox base being spaced above the furnace base, and wherein the circulating air fan output enters the heating chamber underneath the firebox base,

a smoke shelf formed as an indentation in the firebox,

a heated air duct extending through the auxiliary chamber and opening through the firewall into the heating chamber adjacent the smoke shelf in the firebox, and

a pair of baffles, one on each side of the firebox, each baffle being connected to both the respective side wall of the firebox and the outer side wall of the heating chamber, the baffles directing air from the circulating air fan from underneath the firebox upwardly along the sides of the firebox to the top of the firebox and then downwardly along the rear wall of the firebox to enter the heated air duct.

4,269,350

THERMOSTATIC FLUID VALVE WITH POWER ELEMENT EXTENSION AND METHOD OF CONSTRUCTING SAME

Mark E. Beck, Villa Park, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jul. 24, 1978, Ser. No. 927,254

Int. Cl.³ G05D *23/12*

U.S. Cl. 236—34.5 **5 Claims**

1. A temperature responsive fluid valve mountable in an engine cooling system, said valve comprising:

(a) upper housing means having a fluid passageway therethrough, said upper housing means defining an annular valve seat on the inner surface thereof;

(b) lower housing means connected to said upper housing means, said lower housing means having a centrally located opening therethrough, said lower housing means having a fluid passageway therethrough;

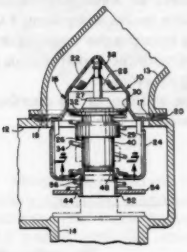
(c) temperature responsive means having its upper end abutting said upper housing means, and its lower end aligned with said opening;

(d) first valve means mounted on said temperature responsive means and movable therewith;

(e) first biasing means for urging said first valve member toward said first valve seat;

(f) extension means projecting from the lower end of said temperature responsive means and axially aligned therewith, said extension means including an elongated tubular member with the upper end thereof having an inwardly turned flanged portion;

(g) means for connecting said inwardly turned flange to the lower end of said temperature responsive means, said connecting means comprising a substantially solid boss located on the lower end of said temperature responsive means, said boss having deformed portions overlapping and axially compressing said inwardly flanged portion of



said tubular member against the lower end of said temperature responsive means;

(h) second valve means received on said tubular member and movable therewith; and

(i) said temperature responsive means movable in response to sensed fluid temperature above a predetermined minimum value between a first position in which said first valve member seals against said first valve seat for blocking fluid flow through said valve, and a second position in which said first valve member is spaced from said first valve seat for permitting fluid flow through said valve.

4,269,351

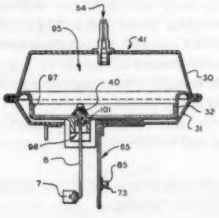
PROPORTIONAL STROKE AUTOMATIC TEMPERATURE CONTROL SYSTEM

John W. Orcutt, Norton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 830,530, Sep. 6, 1977, Pat. No. 4,206,645, which is a division of Ser. No. 501,711, Aug. 29, 1974, Pat. No. 4,063,682, which is a continuation of Ser. No. 422,954, Dec. 7, 1973, abandoned. This application Jul. 19, 1979, Ser. No. 58,884

Int. Cl.³ G05D *23/00*

U.S. Cl. 236—87 **9 Claims**



1. A device for sensing the characteristics of its surroundings at a given point and for providing increased output which is directly proportional thereto at a second point, comprising:

(a) sensing means having a movable output arm;

(b) feedback means attached mechanically to the output arm of the sensing means, the mechanical attachment being a force multiplying device whereby the force applied to the feedback means from the output of the sensing means is proportionally increased; and

(c) a vacuum motor having an output, said vacuum motor having a feedback valve attached to said feedback means so that the feedback means interacts with the motor to vary the vacuum within the motor according to the movement of the output of the sensing means and thereby causes the output of the vacuum motor to be directly proportional to the output of the sensing means.

4,269,352

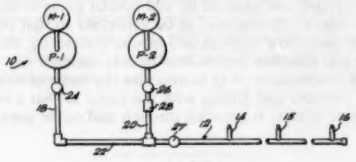
WATER PUMP ARRANGEMENT AND ELECTRIC CIRCUITRY FOR A FOUNTAIN DISPLAY

Gunter Przystawik, 5230 Tamiami Ct., Cape Coral, Fla. 33904

Filed Apr. 16, 1979, Ser. No. 30,518

Int. Cl.³ B05B *17/08*

U.S. Cl. 239—17 **2 Claims**



1. A fountain display comprising a supply of liquid,

a liquid discharge nozzle,

a main conduit connected to the nozzle,

first and second motor driven pumps each having an inlet port communicating with the supply of liquid and each having a discharge port,

separately operable means to operate the first and second pumps individually and to operate both pumps simultaneously,

separate branch conduits connecting the discharge ports of the first and second pumps with the main conduit,

an adjustable gate valve in each of the branch conduits to the first and second pumps to determine the desired maximum height of liquid discharge at the nozzle when both pumps are operated simultaneously,

the first and second pumps being so constructed and arranged that when the second pump is operated separately a portion of the liquid pumped thereby is permitted to escape and the liquid discharged at the nozzle is approximately one third of said maximum height, and

a check valve in the branch conduit interconnecting the second pump with the main conduit whereby when the first pump is operated separately the liquid discharged at the nozzle is approximately two thirds of said maximum.

4,269,353

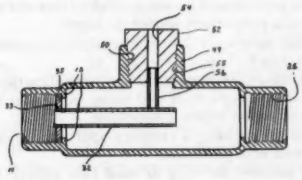
EXHAUST OPERATED VAPORIZER

Tony J. Ivandick, 2593 Shorewood Dr., and Mark J. Ivandick, 2287 Bensonhurst Dr., both of Florissant, Mo. 63031

Filed Aug. 31, 1979, Ser. No. 71,099

Int. Cl.³ A01M *19/00*

U.S. Cl. 239—77 **12 Claims**



1. An exhaust operated vapor producing device comprising

a body portion having a chamber therein, said body portion having inlet and outlet ports formed therethrough which communicate with said chamber,

said inlet port having a tubular connecting member associated therewith for operatively attaching said device to exhaust producing means, said tubular connecting member having a passageway extending therethrough, said body portion having an opening therethrough intersecting said chamber at an intermediate location therealong, means associated with said opening for introducing the material to be vaporized into said chamber, said means having a passageway extending therethrough, a tubular guide positioned in said passageway extending through said means associated with said opening, said tubular guide extending into said chamber engaging said tubular connecting member at a location therealong, whereby the material to be vaporized is guided to said tubular connecting member and agitated by said tubular guide to insure a free flow of the material to be vaporized so that hot exhaust gases flow through said tubular connecting member into said chamber therein heating said chamber to a sufficient temperature so as to vaporize the material entering said chamber and mixing with the vapor so that a vapor-exhaust mixture is expelled through said outlet port.

4,269,354

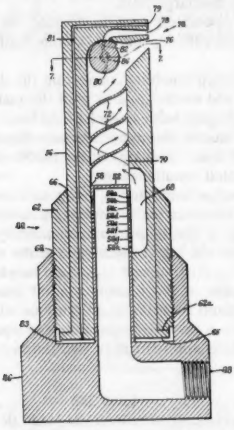
WATER SPRINKLER

Robert E. DeWitt, 49 Sherwick Rd., Oswego, Ill. 60543

Continuation-in-part of Ser. No. 893,268, Apr. 5, 1978, Pat. No. 4,180,210. This application Jun. 25, 1979, Ser. No. 51,861

Int. Cl.³ B05B *3/08*

U.S. Cl. 239—97 **17 Claims**



1. A water sprinkler for distributing water over a desired area of regular or irregular shape, the sprinkler comprising:

a sprinkler body adapted for fixed placement with respect to said area;

a spray head mounted rotatably upon said sprinkler body;

a water inlet port formed in said sprinkler body and communicating to a pressurized source of water;

a water outlet port in said sprinkler body communicating to said spray head;

primary pattern generation means for controlling the pattern of water distribution from said spray head, said primary pattern generation means comprising:

a first member defining a sampling aperture communicating to said inlet port, and

a second member defining at least two pattern-forming apertures one or more of which communicate to at least a portion of the sampling aperture, the area of each pattern-forming aperture which communicates to the sampling aperture being limited to regulate the volume of water flowing through said second member from the sampling aperture, and

a third member comprising a land area in facially-sealing relationship to said second member and which is movable selectively to close from none to all of said pattern-forming aperture(s), and wherein

one of the first and second members rotates with the spray head while the other is relatively fixed in the sprinkler body; and

secondary pattern generation means for adjusting the definition of the pattern of water distribution, the secondary pattern generation means comprising a variable flow port communicating between the water inlet and water outlet ports in parallel with the flow through the sampling and pattern-forming apertures,

whereby the shape and size of the distribution pattern may easily be regulated.

4,269,355

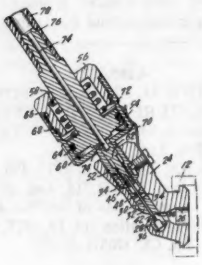
SELF-CLEANING SPRAY NOZZLE

John D. Geberth, Jr., Rifle Camp Rd., West Paterson, N.J. 07424

Filed Mar. 19, 1979, Ser. No. 21,499

Int. Cl.³ B05B *15/02, 1/32*

U.S. Cl. 239—107 **3 Claims**



1. A self-cleaning spray nozzle for use with a spray device adapted for hydraulically atomizing and spraying liquids, said spray device including conduit means communicating with a source of liquid under pressure, said spray nozzle including:

(a) a spray nozzle housing including means for securing said housing to said spray device;

(b) a fluid bore in said housing communicating with said conduit means and terminating in a spray opening in said housing;

(c) a valve bore in said housing intersecting said fluid bore adjacent said spray opening;

(d) a valve stem in said valve bore the end of which forms part of said spray opening;

(e) means for adjustably moving said valve stem in said valve bore to vary said spray opening to thereby vary the fan spray issuing therefrom; and

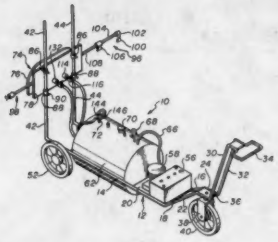
(f) means, in addition to the means for adjustably moving said valve stem, for abruptly retracting said valve stem in said valve bore to abruptly open said spray opening to its fullest extent to thereby permit the dislodgement of matter clogging the spray opening by means of the pressure of said liquid.

4,269,356

PORTABLE AGRICULTURAL SPRAYER

Donald D. Rose, 412 Breezy La., Wharton, Tex. 77488

Filed Dec. 21, 1978, Ser. No. 971,680
Int. Cl.³ B05B 1/20
U.S. Cl. 239—167 **5 Claims**



1. A portable, wheeled, hand-moved agricultural sprayer capable of continuous operation comprising, in combination

an elongated tubular metal frame having a push handle at one end and a pair of vertically extending tubular metal supports at the other end,

a pair of wheels supported at one end portion of said frame,

spray boom support means adjustably supported on said vertically extending supports and adapted to be supported at any predetermined position thereon,

said boom support means comprising a pair of parallel, spaced support plates,

means supporting said plates in spaced relation,

means on one of said plates supporting said spray booms for pivotal movement thereon,

the other of said plates having a pair of slots therein,

said adjustable securing means being positioned in said slots and cooperating with said spray booms to support and secure the same in any predetermined pivotal position,

a pair of hollow tubing spray booms pivotally supported on said boom support means and extending from opposite sides thereof,

a plurality of spray nozzles supported on said hollow tubing spray booms,

adjustable securing means on said boom support means cooperable with said spray booms to adjust and secure said booms independently in any predetermined pivotal position,

a tank supported on said frame for carrying a liquid to be sprayed and operable under air pressure to produce a continuous spray of liquid,

conduit means connecting said tank to said spray booms to supply liquid for spraying,

an electrically driven compressor supported on said frame for supplying compressed air,

conduit means connecting said compressor to said tank to maintain the same under air pressure for spraying, and

an electric storage battery supported by said frame and connected to said electrically driven compressor.

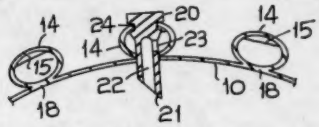
4,269,357

CONTINUOUS DRIP IRRIGATION TUBE

S. W. O. Menzel, Adelaide, Australia; Donald E. Mock, Covina, Calif.; David E. Mominee, Alpine, Calif.; Gilbert W. Vance, Jamul, Calif., and Dale P. Zauner, LaJolla, Calif., assignors to RIS Irrigation Systems, El Cajon, Calif.

Filed Feb. 6, 1978, Ser. No. 875,518
Claims priority, application Australia, Feb. 8, 1977, PC8985
Int. Cl.³ A01G 25/02
U.S. Cl. 239—272 **9 Claims**

1. A continuous drip irrigation tube comprising an extruded strip section having opposite longitudinal edge portions, at least one capillary tube extruded integrally with said strip section, and a common wall forming a portion of said capillary tube, said common wall of the strip having a plurality of inlet apertures leading to the interior of said capillary tube, means for joining said edge portions together to form said strip section into a tubular construction which defines a supply passage, said common wall forming a portion of the supply passage, said inlet apertures providing communication between the supply



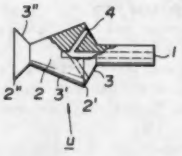
passage and the interior of the capillary tube, said capillary tube having a plurality of outlet apertures in the wall thereof providing communication between the interior of the capillary tube and the exterior of the drip irrigation tube, and said inlet apertures existing in said common wall even in the absence of said joining means.

4,269,358

BINARY FLUID BURNER DEVICE WITH BURNER UNITS COMBINED WHICH FUNCTIONS AS IF IT WERE A SINGLE LARGE-CAPACITY BURNER

Shigemori Ohtani, and Shoji Tanno, both of Sendai, Japan, assignors to Kabushikikaisha Ohkawara Seisakusho, Yoshida, Japan

Filed Jul. 27, 1979, Ser. No. 61,381
Claims priority, application Japan, Aug. 22, 1978, 53-101443
Int. Cl.³ B05B 7/06
U.S. Cl. 239—425 **6 Claims**



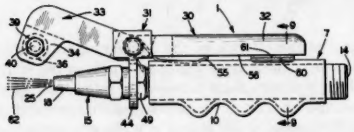
1. A binary fluid burner comprising a burner head defining a plurality of symmetrically arranged orifices and at least one orifice positioned between the symmetrically arranged orifices through which only air passes and a nozzle smaller than said orifices and around which air passes positioned in each of said symmetrically arranged orifices, each said nozzle defining an axial fuel passageway disposed interiorly of said nozzle, a tip portion, a first frustoconical portion diverging in the downstream direction, a first conical portion converging in the downstream direction extending from the widest portion of the first frustoconical portion, said first frustoconical portion and said first conical portion blocking said tip portion, said first frustoconical portion diverging from said tip portion toward the extreme end of said nozzle and defining a plurality of fuel outflow passageways connected to said axial fuel passageway, said fuel outflow passageways being positioned to flow fuel backwardly from the fuel's forwardmost position in the axial fuel passageway until met by air passing over the diverging first frustoconical portion and a second frustoconical portion diverging in the downstream direction extending from the narrowest portion of said first conical portion converging in the downstream direction.

4,269,359

VALVE CONSTRUCTION FOR PRESSURIZED FLOW OF ABRASIVE GRANULAR MATERIAL

Lynn R. Neiss, 4680 Alabama Ave., Navarre, Stark County, Ohio 44662

Filed Jun. 19, 1978, Ser. No. 916,716
Int. Cl.[3] B24C 5/02
U.S. Cl. 239—530 4 Claims



1. A combination of a pressurized source of abrasive granular material and a valve construction for use in controlling the flow of granular material, said valve construction including:

(a) handle means having an outlet nozzle and a supply inlet opening communicating with said nozzle, the inlet opening being in communication with said pressurized source of abrasive granular material, said nozzle terminating in a discharge outlet for directing a spray of granular material against an object, said handle means including a section of rigid pipe having a first threaded end in which said outlet nozzle is threadedly engaged and a second end forming said supply inlet opening, said handle further including a flexible gripping sleeve telescopically mounted on the section of rigid pipe and containing a plurality of finger receiving depressions;

(b) lever means pivotally mounted on the handle means for movement between open and closed position, said lever means having a first gripping end portion and a second nozzle sealing end portion, said end portion forming an included obtuse angle therebetween;

(c) spring means biasing the lever means toward closed position;

(d) sealing means mounted on said second nozzle sealing end portion for movement with said lever means, said sealing means externally blocking the outlet opening of the nozzle when the lever means is in closed position to prevent flow of said granular material from the nozzle, said second nozzle sealing end portion including a pair of spaced flanges, sealing means including a hollow resilient sealing member telescopically mounted on a removable pin extending between the spaced flanges; and

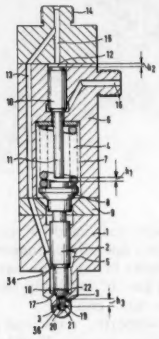
(e) a pivot means mounted on the handle means for pivotally mounting the lever means on the handle means for movement between the open and closed positions, said pivot means including a collar mounted around the handle means, said collar containing a central opening for receiving said handle means and further containing a pair of spaced projections formed thereon and extending therefrom, said pivot means further including a pivot pin extending transversely between said spaced projections for providing said movement, said spring means being a coil spring having a pair of outwardly extending ends, said spring being telescopically mounted on the pivot pin, one of the spring ends engaging the handle means and the other spring end engaging the lever means to bias the lever means toward closed position.

4,269,360

FUEL INJECTION NOZZLE

Odon Kopse, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 13, 1978, Ser. No. 886,319
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1977, 2711902
Int. Cl.[3] F02M 47/02
U.S. Cl. 239—533.8 4 Claims



1. In a fuel injection nozzle through which pressurized fuel is delivered to an internal combustion engine, the nozzle including: a nozzle body in which a bore is defined leading to a plurality of injection openings through which the fuel is injected; a valve needle having at least one end thereof extending into said bore for controlling the opening extent of said injection openings; a closing spring mounted to engage the valve needle and exert a force against the valve needle to move said valve needle toward the injection openings; and an adjusting piston mounted in axial alignment with the valve needle, the adjusting piston being mounted to exert an additional force against the valve needle tending to move the valve needle toward the injection openings, the improvement wherein:

said nozzle body and said valve needle include complementally formed engaging surfaces capable of preventing fuel flow when said valve needle is depressurized;

said bore defined by said nozzle body includes a blind bore into which the injection openings open;

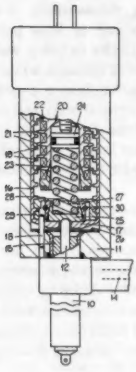
said valve needle includes a frontal portion that cooperates with said blind bore to define a first chamber, a cylindrical section at said at least one end thereof, radially sealable in said blind bore, channel means in said cylindrical section of said valve needle arranged to deliver fuel from a pressure chamber to said first chamber wherein said channel means are closed to fuel delivery when said complementally formed sealing surfaces are in engagement, and at least a pair of pressure receiving surfaces displaced axially relative to each other along the valve needle, such that the pressure exerted against the pressure receiving surfaces when said pressure receiving surfaces are exposed to the pressurized fuel results in a force on each surface tending to move the valve needle away from the injection openings against the spring force and said additional force;

said valve needle having a two-stage opening stroke, whereby a portion of the injection openings are opened by the radially sealed cylindrical section of said valve needle for fuel passage therethrough as a result of the fuel pressure acting against at least one of said pair of pressure receiving surfaces, and the remainder of the injection openings are opened by the radially sealed cylindrical section of said valve needle for fuel passage therethrough as a result of the force acting against all of the pressure receiving surfaces.

4,269,361
FUEL INJECTION NOZZLES

Alec H. Seilly, North Wembley, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Nov. 1, 1979, Ser. No. 90,096
Claims priority, application United Kingdom, Dec. 9, 1978, 47872/78
Int. Cl.³ B05B *1/30*
U.S. Cl. 239—585 **11 Claims**



1. A liquid fuel injection nozzle of the kind intended to be mounted on an internal combustion engine and through which liquid fuel can be supplied to an engine, the nozzle, comprising a body part, a seating defined in the body part, a valve member shaped for co-operation with said seating, resilient means biasing the valve member into contact with the seating to prevent the flow of liquid fuel through an outlet from an inlet, electromagnetic means which when energised, acts to reduce the force exerted by the resilient means on said valve member so that the valve member can move away from the seating under the action of fuel pressure to permit flow of fuel from the inlet to the outlet, an abutment member engaging the valve member and through which the force exerted by the resilient means acts on the said valve member, an armature forming part of said electromagnetic means, the armature including a portion engageable against said abutment member on the side thereof adjacent the valve member whereby when the electromagnetic means is energised said portion of the armature will engage said abutment member to reduce the force exerted by the resilient means on the valve member and when the electromagnetic means is de-energised the portion of the armature can separate from the abutment member, and friction means operable during separation of said portion of the armature from the abutment member to absorb the energy gained by the armature during its movement under the action of said resilient means.

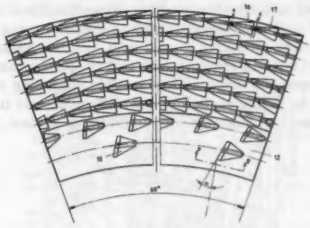
4,269,362
METHOD AND APPARATUS FOR BEATING FIBRE SLURRIES

Leif A. Berggren, Nässjö, Sweden, assignor to Torsten Lennart Berggren, Nässjö, Sweden

Filed Jul. 20, 1979, Ser. No. 59,164
Claims priority, application Sweden, Aug. 7, 1978, 7808423
Int. Cl.³ B02C *7/04*
U.S. Cl. 241—28 **9 Claims**

1. A method of beating a fibre slurry, such as paper pulp, and lump-goods, such as wood-chips and shavings, comprising subjecting said fibre slurry to repeated, rapid pressure pulsations and working moments of short duration, by

(a) gradually compressing said fibre slurry down a compression stage by enclosing quantities of said fibre slurry in spaces of gradually decreasing volume to increase the hydraulic pressure on said fibre slurry during said compression stage and thereby increasing internal frictional co-action between individual fibres of said fibre slurry, but substantially without cutting or shearing said fibres; and thereafter



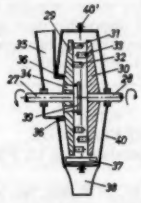
(b) reducing momentarily said hydraulic pressure on said fibre slurry during an expansion phase which follows said compression stage; and then

sequentially repeating steps (a) and (b) on said fibre slurry.

4,269,363
METHOD AND APPARATUS FOR REGENERATING AND REACTIVATING CEMENT

Karl Entzmann, St. Kathrein, Austria, assignor to Simmering-Graz-Pauker Aktiengesellschaft für Maschinen-, Kessel- und Waggonbau, Vienna, Austria

Filed Jun. 6, 1979, Ser. No. 46,184
Claims priority, application Austria, Jun. 26, 1978, 4632/78
Int. Cl.³ B02C *7/04*
U.S. Cl. 241—30 **8 Claims**



1. A method of regenerating and reactivating inactive cement particles having a grain size of 7 to 10 mm and having hydrated surface layers, comprising:

feeding said cement particles to a disintegrator, which disintegrator includes a pin mill having beating pins arranged on two parallel counterrotating grinding disks in concentric alternating rings of increasing diameter, and

in the disintegrator, subjecting said cement particles to from 3 to 8 mechanical beats by said pins within a time period of 0.01 to 0.001 seconds, such that said cement particles are broken into separate particles of a grain size of 7 to 10 mm or finer, with said separate particles being released from said hydrated surface layers of said cement particles thereby liberating non-hydrated layers of said cement particles.

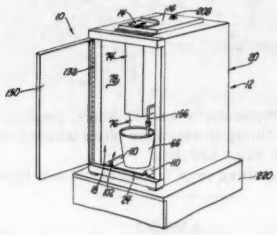
4,269,364
NEEDLE CHOPPER APPARATUS

Dario J. Moriconi, 6916 Old Kings Rd., Apt. 24, Jacksonville, Fla. 32217, and John G. Elder, 6602 Barkwood Dr., Jacksonville, Fla. 32211

Filed Jan. 12, 1979, Ser. No. 2,990
Int. Cl.³ B02C *13/31*
U.S. Cl. 241—36 **28 Claims**

1. A needle chopper apparatus comprising; a vertical feed chute for receiving disposable items, chopper means for chop-

ping disposable items into particles, a tube member having a cylindrical configuration and terminating in a first end and a second end opposite therefrom, said chopper means being disposed in said tube member along the longitudinal axis of said tube member and rotatable therein, an inlet and an outlet defined by said tube member to allow disposable items to fall into and out of said tube member with said inlet having an edge, said feed chute extending to said inlet, reaction means on the edge of said inlet for reacting with said chopper means to chop and cut disposable items, and removable collecting means for collecting the falling particles from said outlet, said tube member including an inner smooth cylindrical surface which is



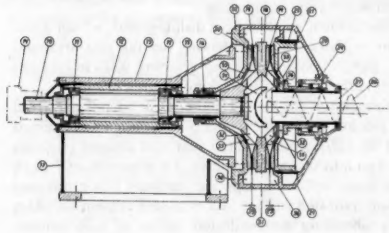
continuous and uninterrupted completely around the interior of said tube member with all of the peripheral edges of said inlet and outlet intersecting said inner cylindrical surface, said reaction means being at the intersection of said edge of said inlet and said inner cylindrical surface and said chopper means being in immediate proximity and close clearance to said cylindrical surface while rotating relative thereto for shearing disposable items between said reaction means and said chopper means as said chopper means engages a disposable item in said inlet and forces the disposable item against said reaction means in said inlet so that the line of shearing is substantially parallel to said inner cylindrical surface.

4,269,365

BEATER MILL

Torsten L. Berggren, Rosenlidsgatan 13, S-571 00 Nässjö, Sweden

Filed Jul. 17, 1979, Ser. No. 58,279
Claims priority, application Sweden, Aug. 7, 1978, 7808424
Int. Cl.³ B02C *7/06*
U.S. Cl. 241—152 A **15 Claims**



1. A twin-flow, single side inlet type refining beater comprising:

a central body;

two outer parts surrounding said central body, said central body and said outer parts being relatively rotatable, and passages being defined between said central body and said two outer parts;

said central body including two ring-shaped beater means **(19)** on opposite sides of said central body;

each of said outer parts respectively including a ring-shaped beater means **(20)** on respective opposite sides of said central body to form two beater zones **(23)** between said beater means, one beater zone on each side of said central body, in which beater zones the goods to be refined are treated during passage thereof substantially radially outwardly and as a result of relative rotation between said central body and said outer parts;

said central body further including a cavity **(26)** with a single axial inlet thereto for the goods to be refined, and inclined radially converging substantially V-shaped walls surrounding the cavity and at least partially defining the cavity, the inclined cavity defining walls having a plurality of holes **(32)** therein through which said goods can be passed to the respective beater zones via said passages formed between the central body and said outer parts, said cavity **(26)** being substantially round in at least one plane and having a diameter in said plane which is substantially greater than the largest cross-sectional dimension of said axial inlet; and

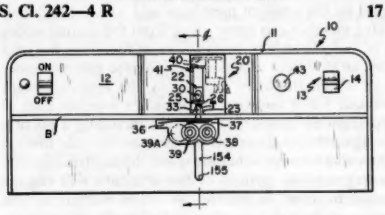
a rotatable propeller-like means **(34)** arranged in said cavity **(26)** to disintegrate said goods fed to said cavity and to spread said goods by centrifugal force to substantially uniformly fill the space between said propeller-like means and said inclined cavity defining walls and thereafter to divide said goods into two substantially equal flows which pass out through said holes **(32)** in respective cavity defining walls and into said passages connecting therewith.

4,269,366

SHUTTLELESS TOROID WINDER

Carl W. Lindenmeyer, Aurora, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 10, 1979, Ser. No. 28,742
Int. Cl.³ H01F *41/08*
U.S. Cl. 242—4 R **17 Claims**



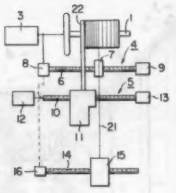
1. Apparatus for assisting a person in winding a wire about a body having a central opening and an axis passing through said opening, comprising: a support adapted to receive said body in supporting relation and defining a slot communicating with the axis of said body when said body is placed on said support; releasable clamping means including a member adapted to engage said body and cooperate with said support to selectively apply an axial retaining force on said body; gripper means for selectively applying a lateral gripping force on said body and mounted for rotation about said axis between a start position and an indexed position; draw means for engaging said wire beneath said body and drawing the same through said opening and in wrapping engagement with said body; indexing drive means for moving said gripper means between said start and indexed position; and actuator means for releasing said clamping means from exerting said axial force on said body and for actuating said gripper means to apply said lateral gripping force on said body as said drive means moves said gripper means toward said indexed position, and for actuating said clamping means and releasing said gripper means as said drive means moves said gripper means toward said start position.

4,269,367

COIL WINDING MACHINE

Takehiro Minami, and Hisashi Shigekusa, both of Yokkaichi, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 9, 1979, Ser. No. 28,346
Claims priority, application Japan, Apr. 14, 1978, 53/44088
Int. Cl.[3] H01F *41/12;* B65H *57/28*
U.S. Cl. 242—7.08 4 Claims



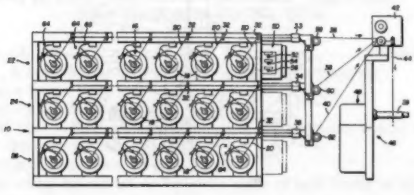
1. A coil winding machine for manufacturing a multilayer coil having a number of coil layers and interlayer insulator layers made of an insulating tape, which machine comprises a coil winding spindle detachably supporting an insulating bobbin, a driving device for driving said coil winding spindle, first and second feed screws extending in parallel with said bobbin, said first feed screw being driven by said driving device through a change gear containing a reversible clutch, said second feed screw being driven by a servomotor, a wire guide and tape guide mounted on said first and second feed screws respectively, first and second position detectors for detecting the positions of said wire guide and said tape guide along said first and second feed screws, and a control circuit for controlling operation of said servomotor based on the output of said first and second position detectors, said control circuit comprising a function generator connected to an output of said first position detector, a subtracting circuit connected to deliver a difference signal between outputs of said function generator and said second position detector, and means for supplying the difference signal to said servomotor.

4,269,368

MICROPROCESSOR CONTROLLED PRODUCT ROVING SYSTEM

Kenneth L. Rapp, Granville, and Walter Zolnerovich, Jr., Newark, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Nov. 7, 1978, Ser. No. 958,582
Int. Cl.[3] B65H *54/02*
U.S. Cl. 242—42 38 Claims



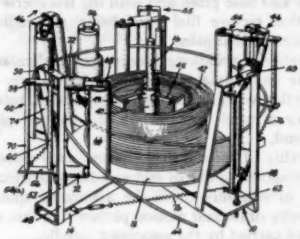
1. A method of controlling strand insertion in a high speed creel assembly used in a roving process, said method comprising the steps of: sensing the operating strands actually being wound in the roving process, comparing the sensed strands actually being wound with the desired strands required for forming a particular product package, indicating whether a prepared standby strand must be added to said operating strands actually being wound to provide said desired strands and inserting said standby strand as required.

4,269,369

POWER DRIVEN DEREELER WITH STRAND TENSION-SENSING DEVICE

Steven L. Stroup, Bluffton, Ind., assignor to Crown Unlimited Machines, Inc., Bluffton, Ind.

Filed Aug. 6, 1979, Ser. No. 63,679
Int. Cl.[3] B65H *59/38*
U.S. Cl. 242—45 4 Claims



1. Power driven dereeling apparatus comprising a rigid, stationary supporting frame, a reel of coiled strand, driven means on said frame for mounting and rotating said reel, driving means for imparting rotation to said driven means, a plurality of strand-engaging devices disposed radially outwardly beyond said reel, said devices being spaced circumferentially with respect to said reel to define a circular coil path of larger diameter than said reel;

each device including a pivot frame having two spaced parallel arms and a roller extending therebetween, a pivot shaft connected at its opposite end portions to said arms, respectively, said pivot shaft being parallel to said roller and spaced therefrom to define a captive strand-receiving opening, the axes of said shaft and roller being parallel to the axis of said reel, a bracket mounted on said stationary frame and pivotally supporting said shaft, said bracket being generally U-shaped with the open ends thereof secured to said supporting frame, said pivot shaft being mounted at one end on said supporting frame and at the other end on said bracket to dispose said pivot frame inside said bracket, anti-chafing material on one leg of said bracket and on said arms between the respective roller and pivot shaft for minimizing chafing of the strand, each pivot frame having a spring operatively connected thereto for urging said pivot frame in a direction to swing said roller away from said reel, said spring being tensioned between the other end of said arms and said supporting frame,

an electrical switch operatively connected to one of said strand-engaging devices and being oppositely operated in response to pivotal movement of said pivot frame thereof between first and second positions, respectively; said driving means being an electric motor and brake operatively connected to said switch and controlled thereby, said motor being actuated and said brake deactuated when said switch is operated in one direction and said motor being deactuated and said brake actuated when said switch is operated oppositely.

4,269,370

APPARATUS FOR CONTINUOUS AUTOMATIC SPOOLING OF MOTION PICTURE FILM

William D. Carter, Rancho Palos Verdes, and Martin S. Mueller, Torrance, both of Calif., assignors to Carter Equipment Co., Inc., Lawndale, Calif.

Filed Oct. 19, 1979, Ser. No. 86,573
Int. Cl.[3] B65H *19/20, 19/04*
U.S. Cl. 242—56 A 4 Claims

1. Apparatus for winding or spooling a continuously moving length of motion picture film onto a series of separate spools or

their equivalent, each of which carries an approximately equal length of motion picture film, without the need for making substantial changes in the speed at which the motion picture film is supplied to the apparatus and without the use of intermediate storage means, comprising, in combination:

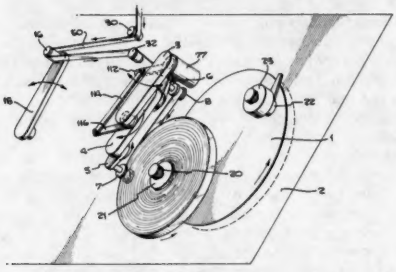
a base plate aligned in a predetermined plane;

means for feeding said length of motion picture film in a direction parallel to said predetermined plane and alongside said base plate, and with the transverse plane of said motion picture film itself being perpendicular to said predetermined plane;

a plurality of spindles extending perpendicular to said base plate and rotatably carried by said plate, each of said spindles, when appropriately positioned, being adapted to carry a spool upon which said motion picture film is wound;

a plurality of spindle drive means, each associated with a corresponding one of said spindles and selectively operable to rotatably drive the associated spindle so as to thereby draw said motion picture film into a roll upon a spool carried by the associated spindle;

a guide mechanism having a plurality of guide rollers



thereon, said guide mechanism being supported relative to said base plate so that all of said guide rollers are arranged parallel to all of said spindles;

means for rotating said base plate through a series of predetermined positions around a continuous loop path such that the actual position of the second one of said spindles when said base plate has rotated a predetermined amount corresponds to the actual position previously occupied by the first one of said spindles when the base plate was in its first position;

means for adjusting the positions of said guide rollers in response both to the rotational position of said base plate and the then existing diameter of a roll of motion picture film being formed on one of said spindles, said guide rollers being operable when one roll is nearly completed to guide the incoming length of motion picture film immediately adjacent the next succeeding spindle; and

means cooperatively associated with said next succeeding spindle and selectively operable when said one roll is completed to sever the incoming motion picture film and also to place its newly cut end into winding relationship with an empty spool carried by said next succeeding spindle.

4,269,371

COMPOSITE, HEAVY-DUTY SPOOL WITH PLASTIC END CONES

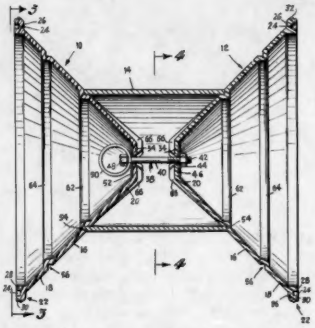
Joseph J. Kovaleski, Easton, Conn., assignor to Wyrepak Industries, Inc., Bridgeport, Conn.

Filed Feb. 29, 1980, Ser. No. 126,065
Int. Cl.[3] B65H *75/14*
U.S. Cl. 242—118.6 **9 Claims**

1. A low-cost, plastic end cone for a heavy-duty dismantleable spool construction adapted to carry a substantial quantity and weight of metal wire, comprising:

(a) a truncated, conical body portion all parts of which are essentially of a uniform thickness of plastic to insure quick and uniform curing of the plastic material,

(b) said conical body portion having large and small base parts and having a strengthened peripheral rim encircling its large base part,



(c) said rim being of U-shaped cross section and defining an annular groove which faces axially away from the body portion,

(d) said body portion having a second annular groove in the exterior of its conical surface, disposed intermediate the large and small base parts thereof,

(e) said rim extending radially outward from the large base part of the body portion, and

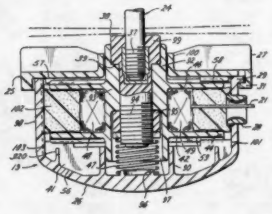
(f) said body portion at its small base part having a transverse wall provided with an aperture to receive a draft bolt.

4,269,372

APPARATUS FOR CUTTING VEGETATION

James L. Kwater, Birmingham, Ala., assignor to Emerson Electric Co., St. Louis, Mo.

Division of Ser. No. 934,226, Aug. 15, 1978, Pat. No. 4,189,833.
This application Aug. 17, 1979, Ser. No. 67,585
Int. Cl.[3] B65H *59/00*
U.S. Cl. 242—129.8 **7 Claims**



1. As a subcombination,

a spool-like member having a core portion and at least two spaced apart flange portions extending radially outwardly of the periphery thereof,

a flexible non-metallic line member wound in coils about said core portion between said flange portions, and

an annular band of a synthetic plastic foam located between said flange portions and having the inner surface of said band in contacting relationship to said coils.

4,269,373

AUTOMATIC STOP MECHANISM FOR TAPE RECORDER

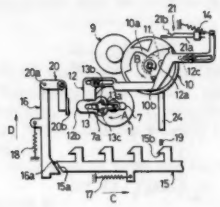
Tatsuhiko Tsuchiya, and Mikiwo Oka, both of Kakuda, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Sep. 18, 1979, Ser. No. 76,603

Claims priority, application Japan, Sep. 29, 1978, 53/133669[U]

Int. Cl.[3] B65H *59/38*; G03B *1/02*; G11B *15/13*

U.S. Cl. 242—191 **15 Claims**



1. An automatic stop mechanism for a tape recorder comprising, in combination:

(a) an operation member for switching the operation of said tape recorder between an operative mode and an inoperative mode;

(b) a first rotary member adapted to rotate in connection with the rotation of either one of the supply reel or the take-up reel of said tape recorder;

(c) a second rotary member adapted to rotate in connection with the rotation of a conventional drive means which is energized in said operative mode of said tape recorder;

(d) a slide member slidable between a first position and a second position;

(e) driving means adapted to cause the sliding movement of said slide member between said first and second positions making use of the torque of said second rotary member;

(f) control means adapted to prevent said slide member from sliding to said second position during rotation of said first rotary member and to allow said slide member to slide to said second position when said first rotary member is not rotating; and

(g) releasing means adapted to respond to said slide member when the latter is in said second position to actuate said operation member to switch said tape recorder to said inoperative mode.

4,269,374

COMBINED ROAD VEHICLE AND AIRCRAFT

Harvey R. Miller, 3655 E. Amazon, Eugene, Oreg. 97405

Filed Jan. 8, 1979, Ser. No. 1,876

Int. Cl.[3] B64C *37/00, 3/56*

U.S. Cl. 244—2 **5 Claims**

1. A combined road vehicle and aircraft comprising

(a) a frame having front, rear and side portions,

(b) front wheel means on said frame,

(c) rear wheel means on said frame comprising a pair of laterally spaced wheels,

(d) a tail assembly on said frame,

(e) wing assemblies on opposite sides of said frame to support the vehicle in the air,

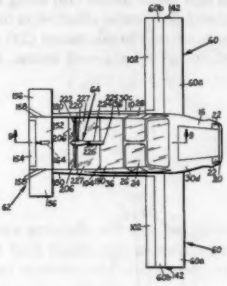
(f) side compartments in said vehicle,

(g) converting means associated with said wing assemblies for moving them outwardly into flying position or for moving them inwardly into stored position in said side compartments,

(h) propelling means on said frame for driving the vehicle in the air,

(i) power means on said frame for driving the propelling means and for driving some of said wheel means,

(j) and laterally expandable and retractible means on said frame attached to said rear wheels arranged to move said rear wheels outwardly into said side compartments during the air use of the vehicle and to move said rear wheels



inwardly relative to said compartments during the road use of the vehicle to provide storage room in said compartments for said wing assemblies.

4,269,375

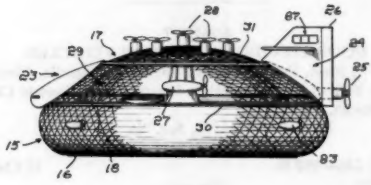
HYBRID ANNULAR AIRSHIP

John J. Hickey, 93 Revere St., Boston, Mass. 02114

Filed Oct. 31, 1979, Ser. No. 89,883

Int. Cl.[3] B64B *1/58, 1/08, 1/34*

U.S. Cl. 244—26 **14 Claims**



1. An airship including a gas-containing annulus including at least one gas-containing portion, a framework providing an annular base portion containing said annulus and an upwardly projecting central portion, said framework open in said central portion, a cabin and flight effecting and guidance means, annular means connecting said cabin and said flight effecting and guidance means to the upper surface of said framework adjacent the outer portion thereof, the capacity of said gas-containing portion at least such as to render buoyant a weight equal at least to the major portion of the light ship weight of the aircraft, and means operable to effect vertical flight of said airship supported by said central portion inwardly of said cabin and flight effecting and guidance means.

4,269,376

APPARATUS FOR CONTROLLING EXPLOSIVE DECOMPRESSIONS IN AN AIRCRAFT OR SPACESHIP

Ulrich Haux, Baldham, and Werner Voigt, Weilheim, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Dec. 4, 1978, Ser. No. 966,207

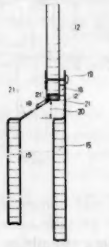
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1977, 2756726

Int. Cl.[3] B64C *1/10*

U.S. Cl. 244—117 R **3 Claims**

1. A device for minimizing damages caused by an explosive decompression in any compartment of a group of contiguous

compartments, comprising wall means separating adjacent compartments from each other, holes in said wall means, panel means operatively arranged to cover said holes, first break means (**18**) operatively inserted between said panel means and said wall means, said first break means (**18**) being arranged to respond to a first pressure differential effective in one direction across said wall means, second break means (**21**) operatively connecting said panel means to said wall means, said second



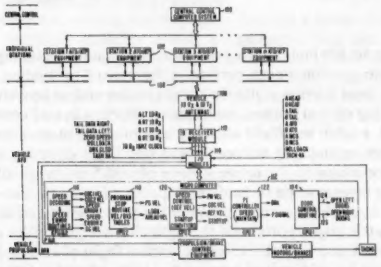
break means (**21**) being arranged to respond to a second pressure differential effective across said wall means in the direction opposite to said one direction, whereby a substantially continuous pressure equalization is possible in both directions and in response to different individual limit loads effective in said two directions, and wherein said first break means (**18**) comprise a strip of foam material surrounding said holes in said wall means, and wherein said second break means (**21**) comprise a rim (**21**) of preimpregnated material.

4,269,377

DOOR CONTROL FOR TRAIN VEHICLES

Donald L. Rush, Penn Hills, and Jayant K. Kapadia, Pleasant Hills, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 28, 1978, Ser. No. 920,104
Int. Cl.³ B61L *3/00*
U.S. Cl. 246—182 B **11 Claims**



1. In apparatus for controlling the doors of a train of passenger vehicles in response to open door signals, with said train having a head end and a tail end, the combination of:

first means for decoding an open door first signal received at the head end of the train and comparing the received first signal with a previous value of that first signal to establish a first good door code signal,

second means for decoding an open door second signal received at the tail end of the train and comparing the received second signal with a previous value of that second signal to establish a second good door code signal,

door control means operative with the first means and the second means for determining that each of the open door first signal and the open door second signal is requesting that the doors of the train be opened on the same side of the train,

means providing a door enable signal in response to said first and second good door code signals, and

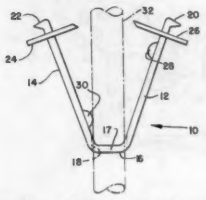
means responsive to the door enable signal for controlling the doors of the train.

4,269,378

CABLE CONNECTOR

Robert L. Barry, 416 Giovanni Dr., Nokomis, Fla. 33555

Filed Nov. 6, 1979, Ser. No. 91,711
Int. Cl.³ F16L *5/00*
U.S. Cl. 248—56 **8 Claims**



1. Apparatus for retaining securely an elongated member in position through an aperture in a panel, said apparatus comprising:

(a) a pair of arms, each arm having first and second ends;

(b) a bite portion interconnecting said arms together at their first ends;

(c) each of said arms having a foot disposed at its second end for engaging said aperture to releasably secure said retaining apparatus to said panel; and

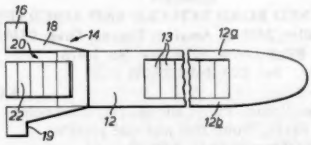
(d) detent means disposed upon at least one of said pair of arms between its first and second ends in a manner to transmit a force exerted upon its second end with increased effect by said one arm acting as a lever to said dent means, whereby said detent means more securely retains said elongated member to said retaining apparatus.

4,269,379

PANEL-FIXING CABLE TIE

Mathew McCormick, East Didsbury, England, assignor to Bowthorpe-Hellermann Limited, Crawley, England

Filed Jun. 6, 1979, Ser. No. 46,194
Claims priority, application United Kingdom, Jun. 30, 1978, 28494/78; Mar. 13, 1979, 8893/79
Int. Cl.³ F16L *3/08*
U.S. Cl. 248—73 **8 Claims**



1. Tie means for connecting a bundle of cables to one side of a panel containing an opening, comprising a flexible elongated strap member (**12**) formed of synthetic plastic material, said strap member including

(a) a horizontal flat body portion one horizontal surface of which contains a plurality of longitudinally extending serrations (**13**); and

(b) an enlarged head portion (**14**) connected with one end of said body portion, said head portion including means defining a pawl portion (**22**) having upper and lower surfaces arranged above and below the horizontal axis of said body portion, that one of said pawl surfaces which is on the same side of the central axis of said body portion as said one serrated horizontal surface containing a plurality

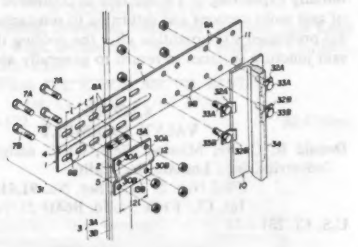
of longitudinally arranged pawl teeth (24) adapted for cooperation with said serrations, the other one of said pawl surfaces being inclined and converging toward said body portion, whereby when the other end of said body portion is introduced from the opposite side of the panel through the panel opening, circumferentially around the cable bundle, and back through the panel opening to cause the pawl teeth to be opposite said serrations, further tensioning of said other end of said strap portion causes said pawl portion to be drawn within said opening thereby to wedge said body portion between an edge of the panel opening and the pawl portion and to lock the serrations into engagement with the pawl teeth.

4,269,380

FLAT TYPE CABLE SUSPENSION STRUCTURE

Eiji Shima, Yokohama; Masao Shimizu, Funabashi, and Hiroshi Den, Yotsukaido, all of Japan, assignors to FEPS International, Ltd., Minato and The Fujijura Cable Works, Tokyo, both of, Japan

Filed Sep. 12, 1978, Ser. No. 941,473
Int. Cl.³ F16L *3/08*
U.S. Cl. 248—74 R **8 Claims**



1. A flat type elevator cable suspension structure which comprises:

(a) a holder member rigidly fixedly secured with respect to the ground and having at its one side a first horizontally extending retaining means;

(b) a keeper member having at its one side a second horizontally extending retaining means; and

(c) a flat type elevator cable extending in substantially vertical direction and securely held between said holder member and said keeper member;

said holder and keeper members having their respective inner surfaces entirely contacted with the flat surfaces of said cable;

said first retaining means cooperating with said second retaining means to crook the flat type elevator cable in a thickness-wise direction, thereby engaging the flat type elevator cable therebetween.

4,269,381

PORTABLE COOK BOOK HOLDER

John F. Harms, 6418 Stony Brook Dr., Fort Wayne, Ind. 46815

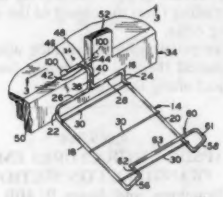
Filed Mar. 7, 1979, Ser. No. 18,301
Int. Cl.³ A47F *5/14*; A47B *5/00*
U.S. Cl. 248—222.2 **15 Claims**

1. A portable book holder comprising:

a back frame having an upper portion and a lower portion and a pair of spaced apart sides, said back frame being adapted to support an open book,

ledge means connected to the lower portion of said back frame and extending forwardly from said back frame, said ledge means being adapted to support the lower edge of an open book, and

hook means connected to the upper portion of said back frame intermediate said sides and adapted for removably hooking behind a vertical post or the like, said hook means comprising a first segment extending upwardly beyond said back frame, means connecting said first segment to said back frame, and a second segment connected to said first segment and extending transversely to said first segment in a generally sidewise lateral direction with respect to said back frame, said second segment terminating in a free end whereby said second segment can hook around a vertical post or the like.

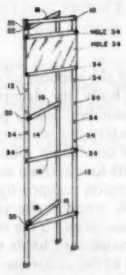


4,269,382

HEIGHT-ADJUSTABLE REAR VIEW HAIR STYLING MIRROR

Blanche E. Coulson, 3720 N. 34 Ave., Omaha, Nebr. 68111

Filed Dec. 19, 1979, Ser. No. 105,349
Int. Cl.³ A47G *1/16*
U.S. Cl. 248—472 **3 Claims**



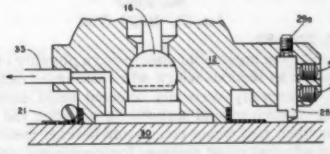
1. A rear view hair styling mirror, comprising, a front panel, a smaller and narrower rear panel foldably hinged thereto; a frame movably mounted on said front panel and a mirror slidably received in said frame.

4,269,383

SUCTION CUP WITH LATERAL GRIPPER

Donald J. Hackman, Columbus; Roger L. Brunel, Grove City, and Harry L. Williams, West Jefferson, all of Ohio, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

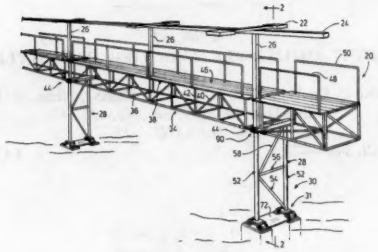
Filed Feb. 23, 1979, Ser. No. 21,288
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—544 **14 Claims**



1. A device for precluding lateral movement of objects held by suction against a surface, comprising:

a suction cup attached to an object for holding the object to the surface,
the suction cup having a resilient sealing edge;
means for evacuating the suction cup; and
at least one surface gripper retentively held by and adjustably protruding from the object to the surface adjacent to the sealing edge,
the gripper penetrating the surface when the suction cup is evacuated thereby precluding lateral movement of the object along the surface.

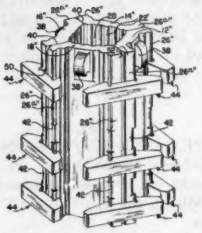
4,269,384
COLLAPSIBLE STRUCTURES EMPLOYING FRANGIBLE CONNECTIONS
Amin Saeed, Brampton, and James B. Hill, Oakville, both of Canada, assignors to DAF Indal Ltd., Mississauga, Canada
Filed May 7, 1979, Ser. No. 36,814
Int. Cl.³ F16M *13/00*; E04B *1/00*
U.S. Cl. 248—548 **17 Claims**



1. A structure for the support of equipment which may be struck by a moving body, the structure comprising a plurality of relatively rigid members and a plurality of frangibly connected joints connecting the plurality of relatively rigid members, each frangibly connected joint including a frangible region oriented with its longitudinal axis in the horizontal direction, the frangible region comprising a relatively brittle material of high strength, wherein the yield point of the material and its ultimate tensile strength are relatively close, to primarily shear under extraordinary loads when applied close to the frangible region but to fail under the combined action of shear and normal stress when loads are applied to the rigid members remote the frangible region, whereby the frangible joints receiving forces transmitted thereto after impact by a moving body with the structure will fail partially or completely and in the event of partial failure, will transmit the remaining forces to at least a second frangible joint for the failure thereof and the collapse of the structure into smaller sections.

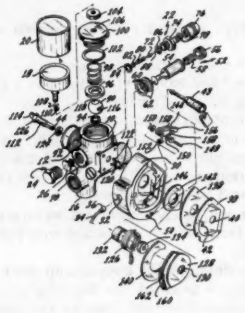
4,269,385
SECTIONAL INGOT MOLD
Harold M. Bowman, 18867 North Valley Dr., Fairview Park, Ohio 44126
Continuation-in-part of Ser. No. 699,650, Jun. 24, 1976, abandoned, which is a continuation-in-part of Ser. No. 600,060, Jul. 29, 1976, abandoned. This application Jan. 15, 1979, Ser. No. 3,093
Int. Cl.³ B22D *7/08*
U.S. Cl. 249—82 **20 Claims**

1. A sectional ingot mold comprising a plurality of separable metal side wall sections which when assembled define at least in part a generally vertically oriented mold cavity, means coacting on each of said sections for coupling the mold sections together, said means comprising fastener means coacting between adjacent mold sections for detachably coupling the latter together along generally vertically extending juncture surfaces, said fastener means being capable of holding said mold sections together in relative position to each other and preventing leakage of molten metal from between the mold sections, said fastener means being comprised of a metallic material posessing memory and providing automatic compensation for expansion and retraction of said mold sections relative to one another upon pouring of molten metal into the mold and the resultant heating and subsequent cooling thereof, said



fastener means resisting but not preventing separation of said juncture surfaces of each mold section during said heating by initially expanding at a lesser rate as compared to the material of said mold sections and returning to substantially their original preheated size condition after the cooling thereof to cause said juncture surfaces to return to generally abutting relation.

4,269,386
VALVE ASSEMBLY
Donald R. Crowe, Mission Viejo, Calif., assignor to Sargent Industries, Inc., Los Angeles, Calif.
Filed Nov. 5, 1979, Ser. No. 91,413
Int. Cl.³ F16K *31/56*; B64D *25/14*
U.S. Cl. 251—74 **23 Claims**



1. A valve assembly including a trigger mechanism for use in controlling the supply of a compressed gas to a gas activated device, including
a valve body including an inlet port for connection to the supply of compressed gas and at least one outlet port for connection to the gas activated device and with an internal recess coupled to the inlet and outlet ports,
a valve member located within the recess in the valve body and intermediate the inlet and outlet ports and with the valve member having a closed position providing for no path between the inlet and outlet ports and having an open position providing for a path between the inlet and outlet ports,
a spring member coupled between the valve member and the valve body for providing a force for normally moving the valve member from the closed position to the open position,
a trigger mechanism mounted on the valve body and includ-

ing an armed position with the trigger mechanism locked and a fired position, and with the trigger mechanism coupled to the valve member and spring member and in the armed position when the valve member is in the closed position and in the fired position when the valve member is in the open position,

the trigger mechanism including a rotatably mounted sector member intercoupling the spring member and the valve member,

the spring member formed as a helix having a first end coupled to the valve body and a second end coupled to the sector member and wherein one of the coupled ends of the helix is at an angular relationship and is loosely received in an opening for allowing the one end to disengage the opening when the turns of the helix do not freely move relative to each other, and

means coupled to the trigger mechanism for unlocking the trigger mechanism to have the trigger mechanism move from the armed position to the fired position to provide for the spring member moving the valve member from the closed position to the open position.

4,269,387

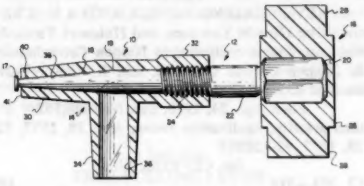
NEEDLE VALVE AND METHOD OF MANUFACTURING A NEEDLE VALVE

Gordon S. Reynolds, Bountiful, and Robert J. Todd, Salt Lake City, both of Utah, assignors to Sorenson Research Co., Inc., Salt Lake City, Utah

Filed Aug. 1, 1979, Ser. No. 62,872

Int. Cl.³ F16K *41/00, 27/02*

U.S. Cl. 251—122 **38 Claims**



28. A needle valve comprising:

a needle member, said needle member having a first tapered end and a second end with a threaded portion intermediate said first and second ends;

a housing molded onto portions of said needle member, said housing comprising a first port sealed around at least a portion of said tapered end, a body molded around said threaded portion of said needle member, and a second port in fluid communication with said first port.

4,269,388

VALVE OPERATING MECHANISM

Alec H. Seilly, North Wembley, and Rasmus J. Sonderskov, Pinner, both of England, assignors to Lucas Industries Limited, Birmingham, England

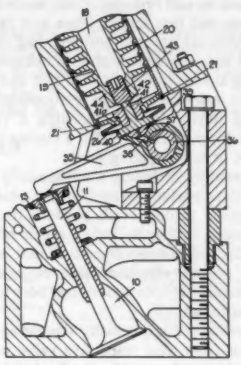
Filed Jan. 11, 1978, Ser. No. 868,489

Claims priority, application United Kingdom, Jan. 12, 1977, 1085/77

Int. Cl.³ F16K *31/10*

U.S. Cl. 251—138 **4 Claims**

1. An engine poppet valve operating mechanism comprising in combination, a pivotal link, said link being positioned in use, to engage a stem of the valve to be operated, an electromagnetic device having a winding to which electric current can be supplied when in use it is required to open the associated valve, an output member forming part of said device and which is moved to an extended position when said winding is energized, and energy storing means positioned between said output member and said link, said energy storing means comprising a pair of dished washers interposed between said output member and a further member cooperating with said output member and abutment means disposed between said link and said further member to permit pivotal movement therebetween, the arrangement being such that in use, when said winding is



energized said output member will move to said extended position, the movement of the link and valve being at least partly effected by energy stored in said means during movement of said output member to the extended position.

4,269,389

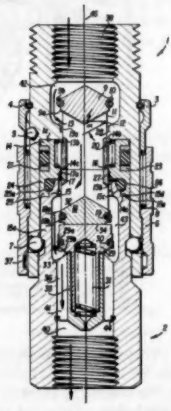
COUPLING DEVICE

Kjell R. Ekman, Zug, Switzerland, assignor to Ekman Engineering AG, Switzerland

Division of Ser. No. 884,668, Mar. 8, 1978, Pat. No. 4,219,048, which is a continuation-in-part of Ser. No. 691,105, May 28, 1976, abandoned. This application Jan. 16, 1980, Ser. No. 112,488

Int. Cl.³ F16L *37/28*

U.S. Cl. 251—149.6 **5 Claims**



1. A coupling device for supplying fluid from a pressurized source to an output conduit without leakage, said coupling device comprising:

a first coupling part having an axial fluid flow passage extending therethrough;

a second coupling part having an axial fluid flow passage extending therethrough;

said first and second coupling parts each having on a respective first end thereof means to permit the detachable cou-

pling of said parts with their respective axial flow passages aligned to permit fluid flow therethrough;
a first means supported within said first end of said first coupling part and supporting thereon an elastic sealing ring;
a second means on said first end of said second coupling part which abuts said first means when said first and second coupling parts are brought into coupling relationship;
said first and second means acting to compress said elastic sealing ring at least radially as said first and second means are brought into said coupling relationship;
said coupling device further including a valve assembly axially slidably supported within a mating bore formed in at least one of said coupling parts;
said valve assembly including a substantially cylindrically-shaped hollow portion formed with a plurality of apertures extending through wall portions thereof, and said valve assembly further including a pair of enlarged end portions attached to opposite ends of said hollow portion, with each portion simultaneously engaging a separate valve seat formed at both ends of said bore to prevent fluid flow therethrough;
and control means for sequentially separating said enlarged end portions from their respective valve seats only after said first and second means form a fluid-tight seal between said coupling parts.

4,269,390

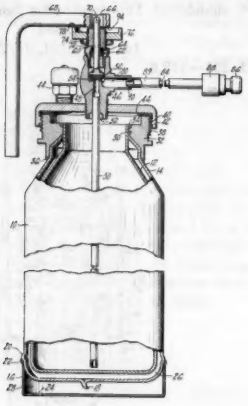
CRYOSURGICAL INSTRUMENT

Michael D. Bryne, Vernon, Conn., assignor to Brymill Corporation, Vernon, Conn.

Continuation of Ser. No. 928,351, Aug. 14, 1978, abandoned, which is a division of Ser. No. 747,904, Dec. 6, 1976, Pat. No. 4,116,199. This application Mar. 17, 1980, Ser. No. 130,845

Int. Cl.[3] **F16K** *31/524, 31/44*

U.S. Cl. 251—254 **1 Claim**



1. An improved cyrosurgical instrument including:
application means for cryosurgical extraction of heat from living tissue in the treatment thereof;
reservoir means for holding liquefied gas cryogen;
and operator-controlled means for conveying a cryogen from said reservoir means to said application means; in which the improvement is in said operator-controlled means and comprises:
a valve member having a central bore and an annular valve seat disposed along said bore, an upstream end of said bore on one side of said valve seat being in fluid communication with said reservoir, and a downstream end of said bore on the other side of said valve seat being in fluid communication with application means;
a valve stem having an axis, said valve stem being rotatably and slidably disposed within said bore;
a valve pad disposed on said valve stem, said valve stem being longitudinally slidable along said axis so as to render said valve member closable with said valve pad seated against said valve seat or openable with said valve pad disposed apart from said valve seat;
a pivot disposed at an end of said valve stem remote of said valve pad, said pivot being perpendicular to said axis of said valve stem;
a handle member rotatably disposed by said pivot;
an annular fulcrum means disposed coaxially on said valve member remotely of said valve seat and adjacent to said handle member in a position related to the position of said pivot so that angular rotation of said handle member about said pivot and said annular fulcrum means causes said valve stem to slide longitudinally away from said valve seat, regardless of the rotary orientation of said valve stem said annular fulcrum means having internal threads; and wherein said valve member has external threads coaxially disposed with respect to said bore and coacting with the threads of said annular fulcrum means, whereby the position of
said annular fulcrum means is adjustable relative to the position of said pivot along said external threads.

4,269,391

VALVE SEALING DEVICE AND A VALVE

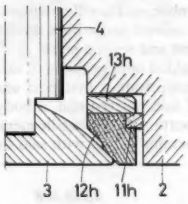
Tutomu Saito; Hiroshi Yamazoe, and Hidenori Yamaoka, all of Yokohama, Japan, assignors to Nippon Petrochemicals Co., Ltd.; Nippon Carbon Co., Ltd. and Kitamura Valve Seizo Kabushiki Kaisha, all of Tokyo, Japan

Filed Apr. 24, 1978, Ser. No. 898,762

Claims priority, application Japan, Apr. 28, 1977, 52-48392; Oct. 28, 1977, 52-128593

Int. Cl.[3] **F16K** *5/06*

U.S. Cl. 251—315 **18 Claims**



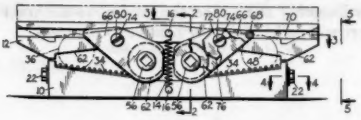
1. A sealing device for a valve comprising a valve body and a valve member, which is adapted to be situated between the valve body and the valve member, comprising:
a valve body contact member;
and a valve member contact member situated between said valve member and said valve body contact member, said valve body contact member including a surface facing and engaging said valve body, said surface in assembly being uniformly compressed against said valve body;
wherein the material from which the valve body contact member is fabricated consists of an expanded graphite compact having a bulk density no less than 1.1 gm/cm^3; and wherein the material from which the valve member contact member is fabricated consists of a carbonaceous material/metallic material composite in which said metallic material is represented in amounts equal to 10–40% by volume of the entire amount.

4,269,392

JACK MECHANISM

Henry L. Andersen, Rte. 1, Box 152, Goldendale, Wash. 98620

Filed Sep. 17, 1979, Ser. No. 76,327
Int. Cl.³ B66F *3/02*
U.S. Cl. 254—95 **3 Claims**



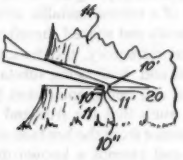
1. A jack mechanism comprising
(a) a pair of members movable toward and away from each other and having opposed faces,
(b) one of said members having a longitudinally extending ramp on its face which is inclined relative to said other member,
(c) rotatable drive means disposed between said members engageable with said ramp,
(d) said drive means and the surface of said ramp having a gripping engagement with each other so that said drive means will be driven along said ramp when rotated,
(e) a track surface on each of said opposed faces extending parallel with the direction of travel of said drive means,
(f) said track surfaces being offset from each other,
(g) spreading means including a shaft extending between said members and a pair of rollers on said shaft one of which engages one of said track surfaces and is disengaged from the opposite face and the other of which engages the other of said track surfaces and is disengaged from the opposite face,
(h) and means operatively connecting said spreading means with said drive means whereby said spreading means forces said members apart as said drive means moves along said ramps.

4,269,393

TREE-FELLING LEVER

Honore Michaud, Lamy, Co. Riviere-du-Loup, Prov. of Quebec, Canada (G0L 1R0)

Filed Nov. 27, 1979, Ser. No. 97,840
Int. Cl.³ B66F *3/00*
U.S. Cl. 254—104 **3 Claims**



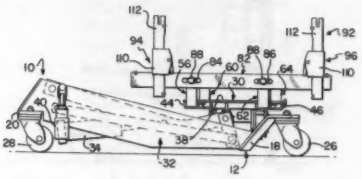
1. A tree-felling lever, especially for frozen trees, comprising a flat plate having top and bottom surfaces and a front transverse straight edge, a lever arm rigidly secured to the top face of said flat plate and extending upwardly at an acute angle and rearwardly from said flat plate, and a bite member downwardly projecting from said bottom surface along said front transverse edge and having parallel front and rear flat faces substantially perpendicular to said bottom surface, and a free edge flat face substantially parallel to said bottom surface, said plate and bite member being thin enough to be inserted into a saw kerf made in the trunk of a frozen tree, whereby said tree may be felled by exerting upward force on the outer end of said lever arm, thus causing pivoting of said plate in said kerf about said bite member and insertion of said bite member into the lower kerf surface practically without cracking the ice in said lower kerf surface, the uncracked ice at the back of the inserted bite member providing an effective abutment means for said bite member, in order for the latter to prevent the flat plate from slipping out of the kerf.

4,269,394

JACK ASSEMBLY FOR TRUCK TRANSMISSIONS, DIFFERENTIALS AND POWER DIVIDERS

Joseph L. Gray, St. Joseph, Mo., assignor to Gray Manufacturing Company, Inc., St. Joseph, Mo.

Filed Jul. 25, 1979, Ser. No. 60,749
Int. Cl.³ B66F *3/00*
U.S. Cl. 254—134 **15 Claims**



1. In a jack having a load-carrying head that is raised and lowered during operation of the jack, means adapting said head for the reception and support of irregularly-shaped, relatively heavy objects, said adapting means comprising:
a pair of elongated rails;
structure attaching said rails to said head in laterally spaced relationship along opposite sides of the head; and
a pair of carriage assemblies adapted for load-supporting engagement with an object to be handled by the jack and mounted on opposite ones of said rails for selective, independent adjustment along the latter and relative to said head into any one of a number of selectable positions according to the characteristics of the particular object to be handled by the jack,
said attaching structure including means operable to permit selective, independent lateral shifting of said rails whereby the position of said carriages relative to said head may be selectively adjusted in at least three independent directions.

4,269,395

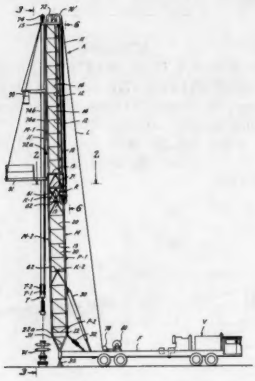
PORTABLE HYDRAULIC RIG FOR PERFORMING WORKOVER, DRILLING AND OTHER OPERATIONS ON A WELL

James L. Newman, 970 Stacewood Dr., Beaumont, Tex. 77707, and Harold D. Lee, 2710 Lakeview Cir., Beaumont, Tex. 77703

Filed Jul. 23, 1978, Ser. No. 923,101
Int. Cl.³ B66C *23/60*
U.S. Cl. 254—386 **19 Claims**

1. A portable hydraulic rig, comprising:
a rig mast having an upper mast section and a lower mast section which are adapted to telescope from an extended use length to a telescoped transport length and to also extend from the telescoped transport length to the extended use length relative to each other;
a hydraulic system including a hydraulic ram mounted with said mast and having an operating deadline connected with the hydraulic ram and with a travelling block;
said hydraulic ram having a ram part which is longitudinally movable relative to said mast for raising and lowering the travelling block relative to the mast when said ram is moved longitudinally downwardly and upwardly, respectively, to perform various operations on or in conjunction with a well; and
means including a means for releasably connecting said

longitudinally movable ram part of the hydraulic ram to the mast for controllably telescoping or extending the



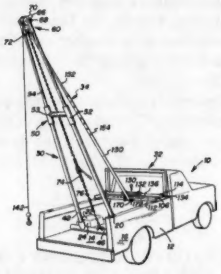
mast sections with the hydraulic system when said ram part is connected to one of the mast sections.

4,269,396

WRECKER-HOIST ATTACHMENT FOR TRUCK BED

John R. Easterwood, 713 Belt Dr., Grand Prairie, Tex. 75052

Filed Jun. 5, 1978, Ser. No. 912,490
Int. Cl.[3] B66C *23/60*
U.S. Cl. 254—325 **10 Claims**



4. A wrecker-hoist combination attachment for mounting on a bed of a truck, comprising:

a base including a bar having spaced receiving tubular feet extending upwardly therefrom, said bar being nonattachably engaged on the bed of the truck,

a pair of lower legs extending upwardly from and removably engaged within the tubular feet extending from the bar of said base,

a midbrace having tubular sleeves joined in a spaced relationship by a connecting bar and receivable on the upper ends of said lower legs,

a pair of upper legs engageable in the sleeves of the midbrace for extending upwardly therefrom,

a pulley assembly including a pulley with a pair of tubular receiving members extending therefrom, said tubular members being spaced more closely than the sleeves of said midbrace, and said midbrace sleeves being spaced more closely than the tubular feet of said base, said pulley assembly being removably engageable in a first position on the upper end of said upper legs and alternatively removably engageable in a second position on the upper ends of the lower legs with the upper legs and midbrace removed, the inside diameter of the tubular feet of said base permitting the angular movement of said lower legs from a first position where the upper ends of said lower legs are inserted into said pulley assembly to a second position wherein the upper ends of said lower legs are inserted into the sleeves of said midbrace, and

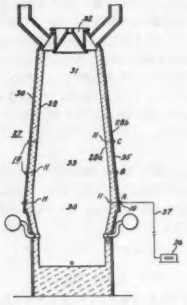
a support member pivotally connected at one end to the pulley assembly and at the second end to the truck to support said pulley assembly relative to the truck.

4,269,397

METHOD FOR MEASURING THE THICKNESS OF A REFRACTORY IN A METALLURGICAL APPARATUS

Robert A. Strimple, Coopersburg, Pa.; Joseph E. Snyder, Forest, Va., and Bruce F. Shoemaker, Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 69,438, Aug. 24, 1979, abandoned. This application Jul. 7, 1980, Ser. No. 166,274
Int. Cl.[3] C21B *5/00*
U.S. Cl. 266—44 **26 Claims**



1. In an improved method for measuring the thickness of a refractory laid-up against the interior surface of the steel shell of a metallurgical apparatus comprising:

(a) placing at least one monitoring device of predetermined length comprised of a central metallic conductor coaxial with a metallic sheath and spaced therefrom by a closely packed pulverulent refractory, the device having a free end and a confined end, both being substantially flat surfaces, the confined end being connected to an electrical connector means, such that the free end is at a known predetermined distance from the hot face of the refractory and the confined end extends a known distance beyond the steel shell,

(b) connecting the confined end by means of the connector means to an electronic instrument capable of generating and impressing fast-rise timed pulses in the device and receiving and displaying pulses reflected by physical features of the device,

(c) adjusting the length of the device on the display using reflected pulses appearing as an inflection from the confined end as a reference point, the reflected pulses along the length of the device appearing as a substantially straight line and the reflected pulses from the free end appearing as an inflection and showing the termination of the device,

(d) sending timed pulses through the device and displaying the reflected pulses, and

(e) determining the thickness of the refractory from the length of the straight line displayed on the instrument.

4,269,398

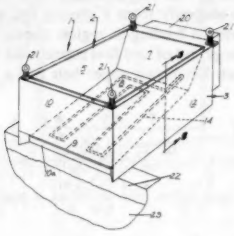
MEANS FOR RECLAIMING GALVANIZING QUALITY ZINC ALLOY FROM CONTINUOUS GALVANIZING LINE TOP DROSS

John C. Hogan, Greenhills, and Alan F. Gibson, Middletown, both of Ohio, assignors to Armco Inc., Middletown, Ohio

Division of Ser. No. 14,127, Feb. 22, 1979. This application Nov. 5, 1979, Ser. No. 91,551

Int. Cl.³ F27B *3/08, 3/18*

U.S. Cl. 266—230 **6 Claims**



1. A dross furnace for use in the reclaiming of galvanizing quality zinc alloy from the top dross of a continuous galvanizing line, said dross furnace comprising a substantially rectangular structure having front, rear and side walls, a hearth sloping downwardly from said rear wall toward said front wall, and an open top, said front wall at the juncture thereof with said hearth having at least one opening therethrough, said at least one opening being so sized as to permit the flow of molten zinc alloy therethrough from said dross furnace while retaining within said dross furnace the spongy slag formed therein, and means to heat said furnace in a controlled fashion to a temperature of from about 460° C. to about 850° C.

4,269,399

METALLURGICAL FURNACE

Bernhard Tinnes, Zollikerberg; Rainer Baumann, Egg, and Bernhard Dür, Oetwil am See, all of Switzerland, assignors to Metacon AG, Zurich, Switzerland

Filed May 1, 1980, Ser. No. 145,876

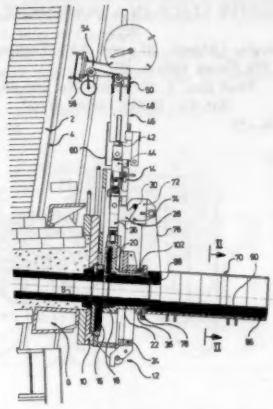
Claims priority, application Fed. Rep. of Germany, May 7, 1979, 2918333

Int. Cl.³ C21C *5/42*

U.S. Cl. 266—236 **7 Claims**

1. In a metallurgical furnace having a side tapping outlet, the combination comprising:

a slide closure for the outlet including a discharge sleeve; and



a chute for bridging the gap between the furnace and a ladle and positioned to receive molten metal from said sleeve.

4,269,400

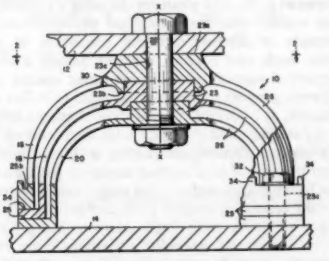
STACKED, RESILIENT ISOLATOR COMPONENTS

William S. Jensen, Canoga Park, Calif., assignor to Barry Wright Corporation, Watertown, Mass.

Filed May 4, 1979, Ser. No. 36,248

Int. Cl.³ F16F *3/08, 1/34, 1/52*

U.S. Cl. 267—153 **9 Claims**



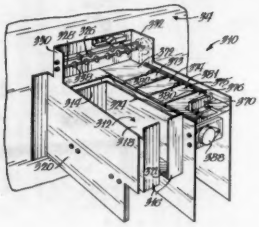
1. An isolator comprising a plurality of concentrically-arranged, nested, bell-shaped components stacked in parallel about a common axis, each component comprising spaced, parallel end parts centered on said common axis, and a plurality of arcuate ribs spaced at equal distances peripherally about said common axis, said ribs being connected at their opposite ends to the respective end parts at different radial distances from said common axis, said ribs defining slots between adjacent ribs including portions at least as wide as the ribs, the ends of the ribs and slots in the respective components at one end of circular shape being spaced axially along said common axis and at the other ends terminating in a common plane perpendicular to said axis which is axially spaced from the circular end parts, said ribs being unconstrained relative to each other in each component and in adjacent components and means securing the end members at opposite ends in engagement against displacement relative to each other.

4,269,401

METHOD AND APPARATUS FOR COLLATING AND STACKING DOCUMENTS AND FOR EFFECTING A HIGH DENSITY STACK IN A DOCUMENT RECEIVING BIN

John R. Sargis, Chicago, Ill., and AES Technology Systems, Inc., 02, Elk Grove Village, Ill.

Filed Dec. 4, 1978, Ser. No. 965,884
Int. Cl.[3] B65H *39/06, 31/02*
U.S. Cl. 270—58 2 Claims



1. An apparatus for receiving documents from first and second adjacent, parallel transport paths in which the documents are aligned in rows of two documents transverse to the paths, said apparatus adapted to arrange the documents into a single stack of documents wherein the two documents of each row in the transport paths are stacked one on top of another such that the document from the first path in a selected row is below the adjacent document from the second path of said selected row, said apparatus comprising:

a stationary, final document receiving means adapted to be aligned at the end of and below said first transport path for receiving documents as the documents are discharged from said first transport path;

a single document holding platform adjacent said receiving means and adapted to be positioned at the end of and in alignment with said second transport path, said platform adapted to receive a document discharged from second transport path, said platform defining a plurality of channels within said platform, said platform comprising a plurality of support elements placed in an end-to-end array, each said support element having a substantially horizontal support surface and being spaced apart from adjacent support elements at each end to define one of said channels at each end, said support elements being successively staggered in elevation with the elevation of successive support elements decreasing with increasing distance from the end of said second transport path; and

means for engaging and moving said documents transversely of said second transport path comprising a plurality of finger elements, each finger element being partially disposed within and partially projecting from one of said channels, each finger element being adapted to move across the width of said platform transversely of said second transport path to engage one edge of a document lying on said platform and to move said document off of said platform and into said receiving means.

4,269,402

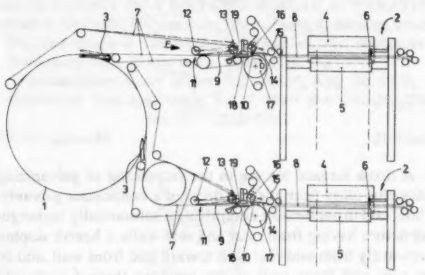
FOLDING APPARATUS

Rudolf Fischer, Lu-Oggersheim, and Karl-Heinz Hartmann, Lambsheim, both of Fed. Rep. of Germany, assignors to Firma Albert-Frankenthal AG, Frankenthal, Fed. Rep. of Germany

Filed Oct. 24, 1978, Ser. No. 954,148
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1977, 2750792
Int. Cl.[3] B65H *45/18;* B41F *13/24*
U.S. Cl. 493—437 10 Claims

1. In a folding apparatus for rotary roller printing presses which includes at least one collecting folder, at least one sword folder positioned behind said collecting folder which includes a folding sword interacting with a pair of folding cylinders, a belt guide having upper and lower belts for conveying folded material from said collecting folder to said at least one sword folder, and a fixed limit stop positioned adjacent to said folding sword which said belt guide passes, the improvement comprising:

said belt guide having at least two successively arranged belt strands successively driven at different stepped speeds, said belt strands comprising a faster-running first strand and a slower-running second strand, said first strand having a discharge end which defines a run-out groove opening wedge-shapedly from a groove tip, and said second strand having a feeding-in region disposed proximate to said discharge end of said first strand, said first and second strands each having an upper belt and a lower belt and



two belt rollers over which said upper belt of each strand passes disposed in the region of the respective run-out and lead-in grooves of said strands, said two belt rollers associated with each of said strands including a first belt roller mounted in fixed position adjacent to said groove tip of its associated opening and a second roller supported for pivotable movement about the axis of said first roller disposed adjacent to the end of said associated opening remote from said groove tip thereof; and

at least one locating stop positioned between said discharge end of said first strand and said feeding-in region of said second strand, said stop moving at a speed equal to that of said second strand and having a path of movement which at least partly overlaps said feeding-in region of said second strand.

4,269,403

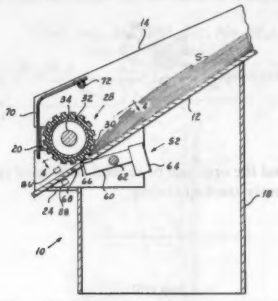
WORKSHEET PRESENTING APPARATUS

Frederick N. Stephens, and Joseph L. Stephens, both of Paola, Kans., assignors to Stephens Systems, Inc., Lenexa, Kans.

Filed Nov. 6, 1978, Ser. No. 957,996
Int. Cl.[3] B65H *3/52*
U.S. Cl. 271—3 5 Claims

5. Sheet feeding apparatus including in combination a friction roller, a plurality of frictional retarding elements, means for biasing said retarding elements for individual movement in the direction of said friction roller at axially spaced locations across said roller, said biasing means comprising respective lever arms carrying said retarding elements and respective weights carried by said lever arms, means for supporting a stack of sheets to be fed with a sheet thereof adjacent said

roller and said retarding elements, and means for driving said roller in such a direction as to separate said sheet from said



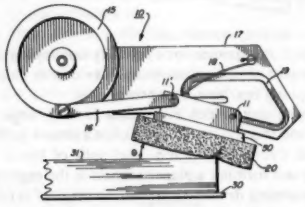
stack and advance it between said roller and said retarding elements.

4,269,404

SINGLE SHEET FRICTION FEEDER

John L. Webb, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 4, 1979, Ser. No. 27,173
Int. Cl.³ B65H 3/02
U.S. Cl. 271—42 **10 Claims**



1. In a sheet feeding device **(10)** having a stack of sheets **(31)** and a sheet separator means **(20)** that includes a frictional surface adjacent the stack of sheets **(31)** and is capable of being deformed as sheets are fed from the stack **(31)**, the improvement characterized by the feeding device including:

(a) means **(18, 18')**, for applying a normal force to said separator means **(20)**; and

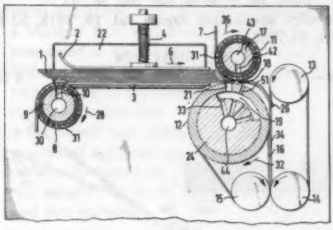
(b) means **(11, 16, 19, 40)** adapted to move said separator means **(20)** across the leading edge of stack **(31)** at an acute angle in relation to the stack **(31)** in the process of feeding a sheet from the stack **(31)**, said separator means **(20)** striking the leading edge of the stack **(31)** at the acute angle and continuing contact with the leading edge of the stack **(31)** at said acute angle over a major portion of its frictional surface during the feeding process whereby the top sheet of the stack **(31)** is forwarded for further processing while sheets immediately below the top sheet are simultaneously inhibited from movement by said acute angle movement of the separator.

4,269,405

SEPARATING UNIT FOR FLAT SHEET MATERIAL

Wilhelm Mitzel, Neukeferloh, Fed. Rep. of Germany, assignor to GAO Gesellschaft fur Automation und Organisation mbH, Munich, Fed. Rep. of Germany

Filed Jun. 22, 1979, Ser. No. 50,977
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1979, 2902068
Int. Cl.³ B65H 3/12
U.S. Cl. 271—94 **9 Claims**



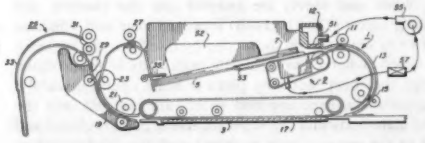
1. A high speed separating unit for separating and advancing sheets of flat material tangentially applied from a stack thereof, said unit having a rotatable separating drum **(12)** with suction openings **(21)** on the exterior thereof exerting a predetermined amount of suction for adhering said sheets to the exterior of said drum for separation and advancement, said separating drum having suction holes **(51)** preceding said suction openings in the direction of turning, said suction holes exerting a lesser amount of suction than said suction openings insufficient by itself to advance the sheets.

4,269,406

DOCUMENT HANDLER

Thomas J. Hamlin, Macedon, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 3, 1979, Ser. No. 81,499
Int. Cl.³ B65H 3/12, 3/18
U.S. Cl. 271—108 **3 Claims**



1. A bottom sheet separator-feeder for separating and forwarding sheets seriatim comprising;

a stack tray adapted for supporting a stack of sheets,

vacuum sheet feed means associated with said tray located in a position spaced from the bottom sheet in the stack,

air injection means adapted to provide a layer of air between said tray and the bottom sheet in the stack and between the bottom sheet and the remainder of the sheets in the stack,

single blower means associated with said vacuum feed means and said air injection means, the inlet to said blower means being connected to said vacuum feed means and the outlet from said blower means being connected to said air injection means; and,

valve means associated with the inlet to said blower means, opening of said valve means at the beginning of a sheet feed cycle causing a "spike" in the pressure of the air supplied to said air injection means for initial lifting of the sheet stack from said tray, acquisition of the bottom sheet in the stack by said vacuum feed means resulting in re-

duced air flow to said air injection means sufficient to maintain the floating position of the stack initiated by the pressure "spike".

4,269,407

SHEET HOLDING CASSETTE

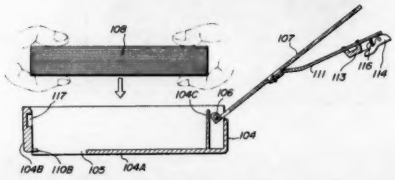
Hiroshi Tsuda, Mitaka; Kiyoshi Miyashita, and Takashi Matsuyama, both of Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 5, 1979, Ser. No. 55,297

Claims priority, application Japan, Jul. 19, 1978, 53-87045; Jan. 26, 1979, 54-7804

Int. Cl.³ B65H *1/24*

U.S. Cl. 271—127 **6 Claims**



1. An improved sheet holding cassette containing a number of superimposed sheets being detachably mounted on a main body of an electrographic apparatus, the improvement comprising: a box-shaped cassette main body **(104)** whose base surface is substantially fully open, a window **(105)** provided in the upper front portion of said cassette main body and through which a sheet feed roller **(102)** is urged against the uppermost sheet of the superimposed sheets, a sheet receiving plate **(107)** substantially closing the open base surface of the cassette main body, being rotatably pivoted at the lower rear portion of said cassette main body so as to be moved inwardly and outwardly with respect to the cassette main body, a leaf spring **(111)** integral with said sheet receiving plate being operative to urge said sheets against said sheet feed roller, a hook member **(114)**, **(120)**, **(130)**, **(142)**, **(161)** provided at the free end of the leaf spring and of the sheet receiving plate, operative to prevent the sheet receiving plate from rotating outwardly by the leaf spring when said sheets are inserted into the cassette, and separating claws **(110A)**, **(110B)** arranged near said window, operative to separate the sheets one-by-one from the superimposed sheets, whereby said cassette main body is upside down and then the sheet receiving plate is made open outwardly, subsequently the superimposed sheets are inserted into the cassette main body and the sheet receiving plate is closed and locked to the cassette main body through the hook member, whereby the uppermost layer of the superimposed sheets is always kept at a given position when urged against the separating claws and the uppermost layer of the superimposed sheets is ready to be fed when the cassette main body is inserted into the electrographic apparatus.

4,269,408

METHOD AND MEANS FOR STACKING FLAT FLEXIBLE SHEETS

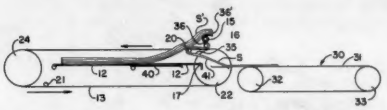
Charles P. Heater, P.O. Box 68, Lake Lure, N.C. 28746

Filed Jul. 12, 1979, Ser. No. 56,872

Int. Cl.³ B65H *31/08*

U.S. Cl. 271—212 **7 Claims**

1. A method of bottom stacking flat flexible sheets which comprises the steps of providing a stacking plate, providing a clamping mechanism in advance of the stacking plate, feeding successive sheets to the clamping mechanism, actuating the clamping mechanism to grip the leading edge of each successive sheet, engaging a first surface of each successive sheet after the leading edge of that sheet is clamped, moving each successive sheet across the stacking plate while reversing the sheet upon itself to lay said first surface of the sheet on the



stacking plate and the opposite or second surface of each sheet against a previously stacked sheet.

4,269,409

ORIGINAL DOCUMENT TRANSPORT MECHANISM FOR ELECTROPHOTOGRAPHIC COPYING MACHINES

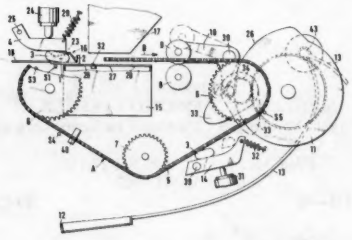
Rüdiger Simonek, Frankfurt; Peter Gumm, Glashütten; Hermann Idstein, Oestrich-Winkel, and Horst Witte, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 15, 1977, Ser. No. 860,902

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1976, 2657198

Int. Cl.³ B65H *5/12, 5/14, 5/02*

U.S. Cl. 271—277 **44 Claims**



1. A transport mechanism for cyclically conveying an original document past an optical scanning device in an electrophotographic copying machine, comprising:

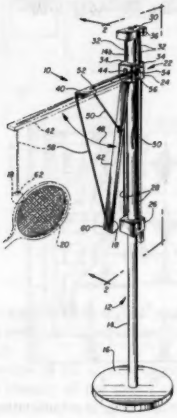
(a) a gripping unit which engages a leading edge of said original and transports this edge over a closed path during the entire cycling operation, said path of travel of said gripping unit forming a planar section in the region of said optical scanning device such that the original is presented as a planar surface for optical scanning;

(b) means connected to said gripping unit for driving said unit over said closed path, said means for driving said gripping unit comprising a transport chain connected to each side of said gripping unit, a front pair of chain sprocket wheels, a back pair of chain sprocket wheels, and a pair of chain tension adjusting wheels, the arrangement of said wheels defining the path of travel of said gripping unit, and each of said pairs of wheels being mounted on a common shaft, the front sprocket wheels, the back sprocket wheels, and the chain tension adjusting wheels arranged in pairs and forming a triangle relative to one another;

(c) a pair of transport rollers disposed above and below the path of the original which engage said original downstream of said optical scanning device and function to further convey said original; and

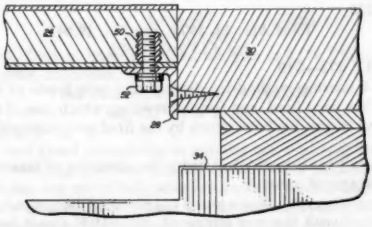
(d) a suction table disposed below said optical scanning device, said suction table comprising a perforated plate with at least two parallel rows of staggered holes.

4,269,410
TENNIS TRAINING DEVICE
James H. Martin, 2120 S. Glenbrook, #16P, Garland, Tex. 75041
Filed Aug. 24, 1979, Ser. No. 69,178
Int. Cl.³ A63B *61/00*
U.S. Cl. 273—29 A **4 Claims**



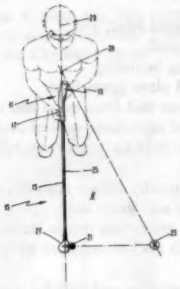
1. A tennis training apparatus, which comprises:
frame means;
a first arm fixedly secured to said frame means and extending outwardly therefrom;
a second arm pivotally secured to said frame means beneath said first arm;
said frame means comprising:
a pair of blocks located in spaced apart relationship;
said first and second arms being secured to one of said blocks; and
a pair of side members rigidly interconnecting said blocks in spaced relationship;
means for selectively effecting manual pivotal movement of said second arm relative to said first arm;
a flexible line of predetermined length extending downwardly from said second arm; and
means located at an end of said first line for releasably connecting a tennis ball thereto.

4,269,411
MODULAR BOWLING LANE SYSTEM
Will Heddon, P.O. Box 3416, Lake Wales, Fla. 33853
Filed Jun. 11, 1979, Ser. No. 47,357
Int. Cl.³ A63D *1/00*
U.S. Cl. 273—51 **18 Claims**



15. In a bowling alley having an existing lane section, leveling strips and lane support structure, a modular lane system comprising:
a. a rectangular lane module having upper and lower surfaces, and first and second ends;
b. means coupled to the lower surface of said module and to said leveling strips for supporting said modular at a predetermined distance above said lane support structure; and
c. a coupler bar for coupling said lane module to said existing lane section such that the upper surface of said lane section and the upper surface of said lane module are in vertical alignment, said coupler bar comprising:
i. a vertical face including a plurality of passageways positioned at spaced apart intervals along said vertical face for receiving first securing means to attach the vertical face of said coupler bar to an end of said existing lane section; and
ii. a horizontal face including a plurality of passageways positioned at spaced apart intervals along said horizontal face for receiving second securing means to attach said coupler bar to the lower surface of the first end of said lane module.

4,269,412
GOLF CLUB GRIP
J. Walter Hughes, Houston, Tex., assignor to Contour-Concept, Inc., Texarkana, Tex.
Filed Oct. 10, 1978, Ser. No. 949,943
Int. Cl.³ A63B *53/14*
U.S. Cl. 273—81.3 **18 Claims**



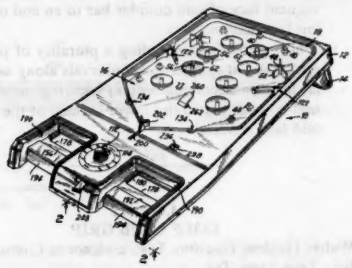
1. A grip for a golf club for fitting over the shaft of a golf club and for reducing hooks and slices in hitting a ball toward an intended target comprising:
a lower hand grip portion having a longitudinal axis diverging outwardly at an acute angle away from the main line of the longitudinal axis of the club shaft as defined between the grip and the club head;
a higher hand grip portion having one end integrally abutting one end of said lower hand grip portion and having an axis diverging outwardly at an acute angle away from said line,
a hollow longitudinal tube formed within the lower and upper hand grip portions for accepting the distal end of the shaft of the golf club,
said axis of said lower hand grip portion diverging opposite the target side of a vertical reference plane passing through said main line and perpendicular to a lateral reference plane defined by said main line and an imaginary line between the club head end of the shaft axis and the intended target, and
said axis of said higher hand grip portion diverging on the target side of said vertical reference plane and on the side of said lateral reference plane opposite the club head.

4,269,413

PINBALL GAME

Michael Langieri, Butler, N.J., assignor to Empire of Carolina, Inc., New York, N.Y.

Division of Ser. No. 767,430, Feb. 10, 1977, Pat. No. 4,189,150.
This application Apr. 19, 1979, Ser. No. 31,688
Int. Cl.[3] A63D 3/02
U.S. Cl. 273—121 R 7 Claims



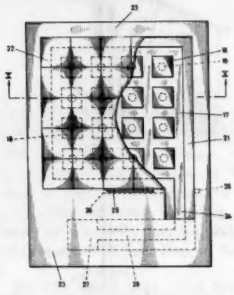
1. A pinball game comprising:
(A) a housing
i. having a front edge, and
ii. an upper wall;
(B) said housing including
i. an inclined plane game field
ii. spaced from said front edge and at a level lower than the level of said upper wall of said housing;
iii. said game field having a front edge and a rear edge;
(C) a ball; and
(D) a ball projecting means adjacent and forward of said front edge of said game field;
(A) said ball projecting means including:
i. a slide with pocket means at its rear end for receiving said ball;
ii. means for guiding said slide for reciprocating rectilinear movement in a front to rear direction at a level below the level of said upper wall of the housing and substantially coincident with the level of said game field so that said slide is concealed below said upper wall of the housing, the rear end of the said guide means providing access for a ball to said game field;
iii. means for biasing said slide and pocket means to a rearward rest position;
iv. manually-manipulatable means for said upper wall;
v. said manually-manipulatable means being kinematically unitary with said slide and being mounted for rectilinear rear to front displacement from a rest position corresponding to said rearward rest slide position to a forward cocked position corresponding to a forwardly cocked slide position;
vi. transversely reciprocal detent means biased to a position in which it retains said slide and pocket means at said cocked position; and
vii. manually-manipulatable ball release means for selectively manually releasing said detent means, whereby said ball is hurled from a concealed cocked position across said playing field by the displacement of said slide and pocket means from the cocked position to the rest position by the biasing means.

4,269,414

SLIDE-PUZZLE

Marc F. DeVos, Binnenhof 3, Knokke-Heist, Belgium, and Hoan G. Gouw, Porto Buenolaan 16, Ouderkerk a/d Amstel, Netherlands

Continuation of Ser. No. 895,779, Apr. 12, 1979, abandoned, which is a division of Ser. No. 716,878, Aug. 23, 1976, Pat. No. 4,097,049. This application Oct. 5, 1979, Ser. No. 82,141
Int. Cl.[3] A63F 9/08
U.S. Cl. 273—153 S 1 Claim



1. A slide-puzzle comprising, in combination, a plate having a substantially rectangular space therein and a rectangular take-up portion in communication with said space, and a plurality of slide-pieces having circumferential grooves therein, the number of slide-pieces being such as to occupy the entire space when the puzzle is solved, said plate forming inwardly directed flanges extending along the inner surface of the part of the plate which forms the perimeter of said space and said take-up portion, said take-up portion being in communication with a channel formed in said plate and provided with inwardly directed flanges, said channel terminating in an opening formed in said plate and dimensioned to receive said slide-pieces therein, said space having a plurality of guide plates arranged in vertical and horizontal rows in order to guide the slide-pieces as they are rearranged to solve the puzzle, said slide-pieces being slidably retained in said space by means of said circumferential grooves interengaging said flanges and guide plates, a frame mounted on the top surface of said plate outboard of said flanges which extend along the perimeter of said space and said take-up portion, said slide-pieces being dimensioned so that the surface thereof lies in the same plane as the surface of the frame, and said frame covering said channel and said opening and blocking the end of said take-up portion so that only one of said slide-pieces may be accommodated in said take-up portion while solving the puzzle and preventing withdrawal of the slide-pieces.

4,269,415

SCORING SYSTEM FOR SHOOTING GALLERY

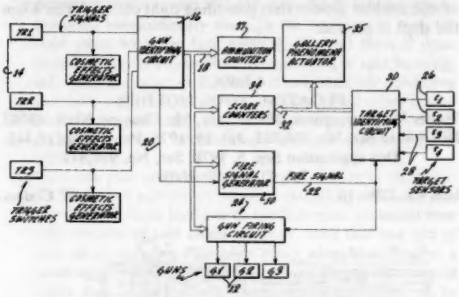
George M. Thorne-Booth, 4614 Sendero Pl., Tarzana, Calif. 91356

Filed Apr. 13, 1979, Ser. No. 29,641
Int. Cl.[3] F41J 5/02
U.S. Cl. 273—310 21 Claims

1. A scoring method for determining which one of several guns has been fired, and for determining which one, if any, of several targets has been struck by the fired gun, comprising the steps of:
sensing in chronological order the identities of successively triggered guns;
generating each time a gun is triggered a FIRE signal associated with the gun triggered, the FIRE signal having a preset duration and being initiated when the gun is triggered, unless the immediately preceeding FIRE signal is

still present, in which case initiation of the later FIRE signal is delayed until termination of the earlier FIRE signal, the triggered gun being fired upon initiation of the later FIRE signal;

sampling the targets, starting the sampling a preset time after



initiation of each FIRE signal and continuing until a struck target has been found or until all of the targets have been sampled;

sensing the identity of the struck target; and,

associating the identity of the struck target with the identity of the gun associated with the current FIRE signal.

4,269,416

HEAD SHELL FOR RECORD PLAYER TONEARMS

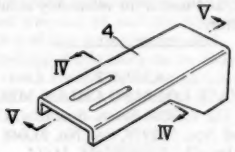
Toshikazu Yoshino; Yasuyuki Arai; Tsunehiro Tsukagoshi, and Shinichi Yokozeki, all of Ohmorinishi, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Aug. 3, 1979, Ser. No. 63,532

Claims priority, application Japan, Aug. 4, 1978, 53-94654; Aug. 18, 1978, 53-99955; Dec. 28, 1978, 53-161227

Int. Cl.³ G11B *3/10*; B29D *3/02*; B32B *9/04*

U.S. Cl. 369—256 **8 Claims**



1. A head shell for a record player tonearm comprising a composite material essentially consisting of 10–90 parts by weight of a thermoplastic resin and 90–10 parts by weight of flaky graphite wherein the composite material is prepared by kneading the components and the graphite flakes are oriented substantially in parallel with the surface of the shell.

4,269,417

SEAL GLAND

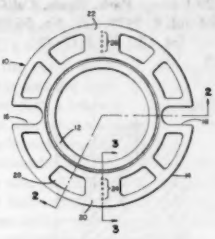
Walter L. Dutton, Andover, Mass., assignor to A. W. Chesterton Company, Stoneham, Mass.

Filed Jun. 13, 1979, Ser. No. 48,030

Int. Cl.³ F16J *15/00*

U.S. Cl. 277—11 **5 Claims**

1. A seal gland comprising an annular seal engaging surface and a mounting portion, radially spaced from said surface, comprising one set of bolt positions radially spaced from and circumferentially spaced about said surface, said bolt positions of said one set each comprising a radially elongated slot, characterized in that said mounting portion further comprises a second set of bolt positions radially spaced from and circumferentially spaced about said surface, said bolt positions of said second set positioned between pairs of said positions of said



first set and said bolt positions of said second set each comprising a plurality of detents radially spaced from each other at predetermined radial positions.

4,269,418

HYDRAULIC SEAL FOR FLUID MACHINES

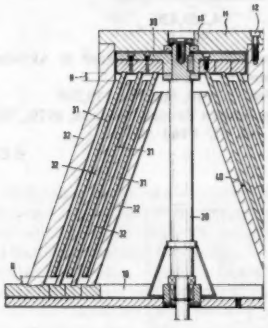
Silvio Valentini, and Mario Serafica, both of Genoa, Italy, assignors to Nira Nucleare Italiana Reattori Avanzati, Genoa, Italy

Filed Feb. 1, 1980, Ser. No. 117,630

Claims priority, application Italy, Feb. 7, 1979, 12454 A/79

Int. Cl.³ F16J *15/40*

U.S. Cl. 277—14 V **7 Claims**



1. A hydraulic seal for a fluid machine having a horizontal cover and a vertical rotating shaft extending up through a central opening in said cover, said seal comprising:

disc means fixed on and rotating with said shaft, said disc means being spaced upwardly from said cover,

a plurality of rotating frusto-conical sheaths having smaller ends fixed to the lower side of said disc means and extending down almost to said cover, said rotating sheaths being coaxial with said shaft and being spaced apart one inside another,

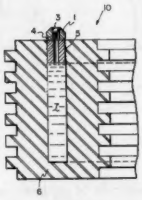
a plurality of stationary frusto-conical sheaths having larger ends fixed to the upper side of said cover and extending up almost to said disc means, said stationary sheaths comprising a sheath interposed between said rotary sheaths, an inner sheath inside the innermost rotating sheath and an outer sheath outside the outermost rotating sheath, and

liquid filling spaces between said sheaths.

4,269,419
FLUID PRESSURE SLEEVE AND RUBBER GASKET PIPE JOINT

Robert J. Brant, 29 College Park, Davis, Calif. 95616

Filed Jul. 9, 1979, Ser. No. 56,131
Int. Cl.[3] F16J 15/46
U.S. Cl. 277—34.3 6 Claims



1. A sleeve for frictional disposition between a pipe and a surrounding area having an opening through which the pipe passes, said sleeve formed from a roll of heavy rubber having double walled construction and is preferably of cylindrical cross sectional shape wherein said sleeve is cut from the roll to appropriate band width and the cut lines are sealed to provide a hollow central portion between the double walls, said sleeve further including:

ribs on inner and outer annular surfaces of said sleeve for improved retention between the pipe and the surrounding area,

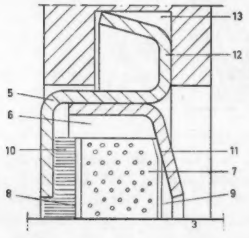
first and second valves inserted into said sleeve communicating with said hollow central portion,

and a non-hardening fluid material disposed within said central portion through said valves, whereby when said sleeve has been expanded between said pipe and surrounding area, shifting of the pipe relative to the area, vibrations in the pipe and the like are dampened.

4,269,420
SEAL

Stig Persson, Katrineholm, Sweden, assignor to Aktiebolaget SKF, Goteborg, Sweden

Filed Feb. 7, 1980, Ser. No. 119,509
Claims priority, application Sweden, Mar. 30, 1979, 7902838
Int. Cl.[3] F16J 15/48
U.S. Cl. 277—53 6 Claims

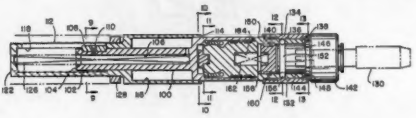


1. A seal for a gap between a rotatable shaft (3) or the like and an element (1) surrounding the shaft, the seal comprising an annular first member (5) mounted on said element, and surrounding the shaft, said first member having an opening of greater diameter than the shaft to allow for skewing of the shaft, said first member having two spaced side walls forming an annular groove (6) open towards the envelope surface of the shaft; and a second member (7) rotatable with the shaft and enclosed by said annular groove and radially spaced from the surface comprising the closed end of said annular groove, said second member being constituted by a resilient ring with opposite axial end surfaces (8, 9) one of which being provided with a plurality of discrete fibers uniformly arranged mainly perpendicular to one of said axial surfaces, the free ends of the fibers sealingly contacting and flexing against one of the side walls in said annular groove, the other one of said axial end surfaces directly and sealingly contacting the other one of the side walls of said annular groove thus providing tight contact even when the shaft is skewed.

4,269,421
FLOATING TOOL HOLDER

Walter W. Wawrzyniak, 39230 Gary, Mt. Clemens, Mich. 48043

Division of Ser. No. 706,933, Jul. 19, 1976, Pat. No. 4,111,442.
This application Sep. 5, 1978, Ser. No. 939,872
Int. Cl.[3] B23B 31/08
U.S. Cl. 279—16 12 Claims

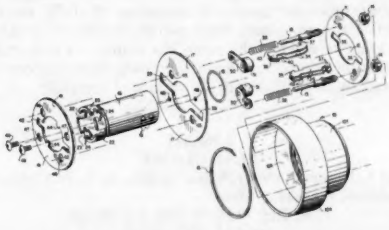


1. A floating tool holder comprising a shank having a longitudinal axis adapted to be secured in a spindle or the like at one end and having a recess with an axially extending wall in the other end, floating structure positioned within the recess in the other end of the floating tool holder shank including a tool receiver having a ball on one end thereof and a tool adapter and resilient means for permitting translation of the floating structure relative to the longitudinal axis of the shank and pivoting of the floating structure about the axis of the shank operable between the shank and floating structure, means for positively driving the tool receiver and tool adapter in rotation in response to rotation of the shank of the floating tool holder, including a slot in the bottom of the recess in the other end of the shank, a slot in the ball on the one end of the tool receiver perpendicular to the slot in the recess in the shank and a T-shaped drive member having one portion positioned within the slot in the shank and one portion positioned within the slot in the tool receiver, and means for releasably securing a tool to the floating structure.

4,269,422
QUICK RELEASE LOCKING CHUCK MECHANISM

Eugene S. Biggs, 172 E. 3000 South, Bountiful, Utah 84010

Filed Nov. 5, 1979, Ser. No. 91,048
Int. Cl.[3] B23B 31/18, 31/14
U.S. Cl. 279—38 5 Claims



1. A chuck assembly adapted for quick and easy engagement and disengagement with work arbors having various working tools mounted thereon, said chuck assembly comprising:

a housing having a substantially circular open end and an opening in the other end which is substantially coaxial with said open end;

an anchor assembly including a substantially circular anchor plate mounted on the inside of said housing, said anchor

plate having a central opening therethrough which is coaxial with the axis through the open end of the housing;

an elongate chuck member having a longitudinal bore extending from one end to the other end thereof, said chuck member also having a substantially circular face plate mounted near one end thereof, said chuck member being mounted longitudinally through the opening in said anchor plate with the face plate at one end thereof positioned coaxially adjacent to the open end of said housing, and with the other end of said chuck member extending coaxially outwardly from the opening in said other end of said housing, whereby said housing is adapted for reciprocating movement longitudinally along said chuck member;

at least one pair of diametrically opposed slots in the cylindrical wall of said chuck member extending from said one end of said chuck member to the face plate mounted near said one end of said chuck member, with said one end of said chuck member otherwise being adapted to receive a work arbor in concentric engagement therewith, and said other end of said chuck member being adapted to be attached to the shaft of a drive motor;

a pair of locking fingers having hooks at mutually corresponding ends thereof, said hooks being adapted to fit into and extend through the pair of slots in said chuck member, said locking fingers extending longitudinally along the outer sidewall of said chuck member, with the other mutually corresponding ends of said locking fingers being pivotally attached to the anchor plate so that the locking fingers are adapted for longitudinal movement along said chuck member with said housing as well as for pivotal movement of the hook ends thereof outwardly away from said chuck member;

spring means mounted between said anchor plate and said face plate biasing said housing to a rest position away from said one end of said chuck member;

means for pivoting said hook ends of said finger members inwardly through said slots in said chuck member when said housing is in its biased, rest position;

means for pivoting said hook ends of said finger members outwardly from said slots in said chuck member so that the hook ends pivot back at least to the inner surface of the bore in said chuck member when said housing is pushed toward said one end of said chuck member against the biasing force of said spring means; and

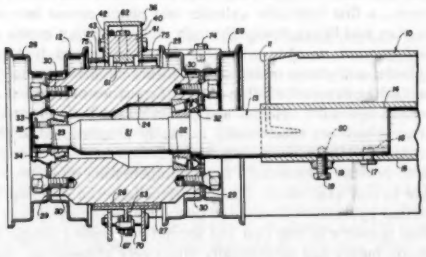
means for locking the housing in its biased, rest position when the chuck assembly is being rotated about the longitudinal axis of said chuck member.

4,269,423

BRAKE AND WHEEL ASSEMBLY

Hector R. Perez, HN-22EL, Comandante Ave., Country Club, Rio Piedras, P.R. 00924

Filed Aug. 2, 1979, Ser. No. 63,135
Int. Cl.³ B62D *61/00*
U.S. Cl. 280—80 R **6 Claims**



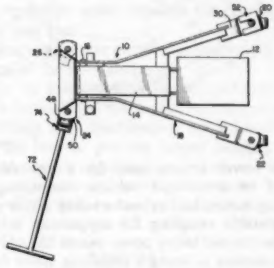
1. A brake and wheel assembly adapted for mounting to a vehicle frame comprising a brake rotor also serving as a dual wheel hub, dual wheels detachably secured to opposite end faces of said rotor and forming a rotational unit therewith, an axle extension shaft including rotor support bearings carrying said rotational unit, means for detachably connecting said axle extension shaft to a vehicle frame part, said axle extension shaft extending from the outer wheel of said dual wheel inwardly through said rotor and the inner wheel of said dual wheels to said vehicle frame part, a brake shoe mechanism mounting unit arranged in cross axis relationship to said rotor and axle extension shaft and adapted for connection to a vehicle frame in cantilevered relationship thereto, said mounting unit including rear and interior side plates and a top backbone bar in unitized relationship and also including a detachable outer side cover plate, brake shoes within said mounting unit in opposing relationship and in surrounding relationship to said rotor, brake shoe hydraulic actuator means in said mounting unit including bodies located and seated on said backbone bar in a manner to transmit stresses developed by brake application through said bodies directly to the backbone bar, and brake shoe adjusting and release biasing means within said mounting unit.

4,269,424

SWIVEL LOCK AND TOW BAR ASSEMBLY FOR FOUR-WHEEL CASTER JACK ASSEMBLY

Joseph L. Gray, St. Joseph, Mo., assignor to Gray Manufacturing Company, Inc., St. Joseph, Mo.

Filed Jul. 25, 1979, Ser. No. 60,748
Int. Cl.³ B60P *1/44*
U.S. Cl. 280—92 **10 Claims**



1. A jack assembly for use in connection with the installation, removal and service of heavy transmissions, differentials and related components from the underside of heavy-duty service trucks and the like comprising:

a generally horizontal platform operable to support said heavy truck components or the like during said installation, removal or service;

four rotatable support caster wheels for said platform;

means mounting the caster wheels on the underside of the platform in essentially a common horizontal plane and in disposition for independent normally free swiveling movement of each about a corresponding upright axis spaced from the axes of swiveling of the remaining caster wheels;

loading means releasably engageable with the mounting means for one of the caster wheels and operably to fixedly couple such mounting means to the platform to lock said one wheel against swiveling without in any way interfering with its ability to roll freely along a supporting surface; and

a steering handle releasably attached to the mounting means for an oppositely trailing or leading wheel with respect to the path of travel of the jack assembly and operable when manipulated to turn the mounting means to which it is connected, about the upright axis of swivelling thereof without interfering with the free ability of the wheel

supported thereon to roll freely along a supporting surface,

said jack assembly being maneuverable by pushing or pulling on the steering handle while turning such handle as may be necessary to cause the platform to properly receive and support a heavy truck component such as a transmission, differential or the like as it is released from a vehicle and in like manner, allow precise and extremely accurate repositioning when the component is reattached because mounting belts and their receiving holes require exact alignment before replacement is possible.

4,269,425

SAFETY COVERING FOR ROTARY GATING IN ARTICULATED BUSES

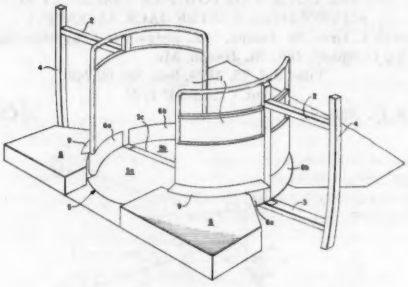
Karl König, Böblingen, and Emil Heldmaier, Altdorf, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Dec. 26, 1978, Ser. No. 972,686

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2758056

Int. Cl.³ B60D *5/00*

U.S. Cl. 280—403 **8 Claims**



1. Safety cover arrangement for a turntable articulation coupling of an articulated vehicle comprising a vertically oriented ring mount barrier and a safety cover means carried by said turntable coupling for supporting said ring mount barrier, wherein said safety cover means has a U-shaped transverse cross-section defining a receiving space for receiving a lower end of said ring mount barrier with upper free ends of legs of said U-shaped cross-section in engagement therewith, and wherein said safety cover means is formed of an elastic material for enabling the upper ends of said legs to remain in engagement with said ring mount barrier despite changes in pitch and bending angles between portions of said vehicle articulated by said turntable coupling.

4,269,426

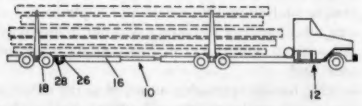
TRACTOR/TRAILER SAFETY DEVICE

Bharat Bhushan, 1014 Longspur Rd., Audubon, Pa. 19403

Filed Feb. 21, 1979, Ser. No. 13,299

Int. Cl.³ B62D *53/06*

U.S. Cl. 280—432 **8 Claims**



1. In a tractor/trailer disconnect system having a pneumatically operated, spring biased piston, to which is connected a bearing pin for mechanically connecting the trailer to the tractor, said bearing pin being secured in a connecting position by a shear pin; a skid plate suspended in front of the wheels of the trailer; a control for venting the trailer air brakes and for connecting a source of gas pressure to the cylinder for moving the piston to shear said shear pin and lift the bearing pin and mechanically disconnect the trailer from the tractor, and for operating a device for releasing the skid plates to drop in front of the trailer wheels; wherein the improvement comprises:

an emergency flasher (F)and power pack (P), including a relay (R) for energizing a solenoid (S), and a switch (L) operated by said solenoid and having a lock on position to keep the emergency flasher unit energized even after the tractor power supply has been disconnected;

a switch (70,72) in said control for connecting said relay (R) to a source (B) of electrical power for energizing said solenoid when said control is operated;

guide means for guiding said skid plates to drop in front of said trailer wheels irrespective of the motion of said trailer;

sequencing means to ensure that said piston is operated to lift said pin first, and then the brakes are applied gradually while the wheels continue to roll onto the skid plate when it drops in front of the trailer wheels, and then the emergency flashers are operated to warn traffic as the trailer comes to a halt.

4,269,427

LIFTING DEVICE AND ASSOCIATED STRUCTURE

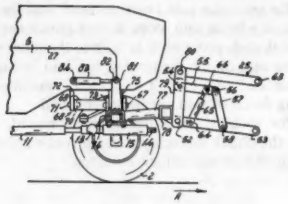
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Division of Ser. No. 788,915, Apr. 19, 1977, Pat. No. 4,194,756. This application Mar. 27, 1979, Ser. No. 24,189

Claims priority, application Netherlands, Apr. 23, 1976, 7604307

Int. Cl.³ A01B *59/043, 59/048*

U.S. Cl. 280—446 A **10 Claims**

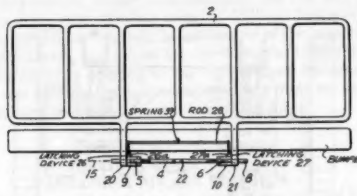


4. The combination of a vehicle having a frame and axle means, said axle means adapted to pivot relative to said frame about a horizontal axis parallel to the longitudinal axis of the vehicle, with a lifting device, supporting means for said lifting device rigidly connected to said axle means and extending normally therefrom whereby said lifting device pivots with said axle means, support members included in said supporting means, a first hydraulic cylinder and piston means interconnecting said lifting device through said supporting means and said support member with said frame, a second hydraulic cylinder and piston means in said lifting device for actuating said lifting device for lifting a load, the pistons of said first and second hydraulic cylinder and piston means having working areas which are substantially inversely proportional to their respective effective working distances from said axle means so as to provide substantially equal compensating moments relative to said axle means, conduit means between said first and second hydraulic cylinder and piston means for equalizing the fluid pressure in said first and second hydraulic cylinder and piston means and substantially effectively eliminating torque from said axle means exerted from said supporting means because of the lifting of said load by said lifting device.

4,269,428
HIDEAWAY TOW HITCH

Carl A. Rexine, General Delivery, Bowden, N. Dak. 58418

Filed Oct. 15, 1979, Ser. No. 84,864
Int. Cl.[3] B60D 1/14
U.S. Cl. 280—491 R 6 Claims



1. A hideaway tow hitch for a principal vehicle having a length, a chassis, a grill and a grill guard mounted on the vehicle and extending substantially adjacent the grill, said hideaway tow hitch comprising

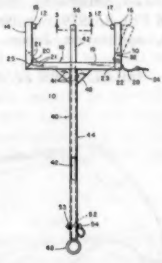
a towing device for releasably coupling a towing vehicle to said principal vehicle; and

mounting means including a pair of spaced parallel guide bars affixed in substantially horizontal position to said chassis for movably mounting said towing device on the chassis beneath the grill guard of said principal vehicle in a manner whereby in a tow position said towing device extends beyond said grill guard and said principal vehicle and in a retracted position said towing device is behind said grill guard and is substantially unnoticeable, said towing device being freely movable in directions of length of said vehicle and in a range of angles relative to said guide bars.

4,269,429
TOW BAR FOR AIRCRAFT

Arvin B. Eichstadt, R.R. No. 1, Box 24, Crescent, Iowa 51526

Filed Feb. 12, 1980, Ser. No. 120,934
Int. Cl.[3] B60D 1/14; B64C 3/00
U.S. Cl. 280—503 10 Claims



1. A tow bar for aircraft comprising: right and left aircraft-engaging units spaced horizontally from each other for engaging opposite sides of an aircraft steerable nose wheel assembly, right and left arms extending forwardly from and attached to said units, a shoulder extending from right to left and connecting forward ends of said arms, forward and rearward elongated tongue sections extending forwardly from said shoulder, said tongue sections being collapsably connected together and being positionable in storage positions in which the forward end of said forward section is much closer to said shoulder than when said tongue sections are in towing positions, said left arm being pivotally attached to said shoulder for pivoting about a substantially vertical axis, said shoulder and said left arm lapping each other in a position offset from said axis, a releasable holding assembly operably correlated with said lapping portions of said arm and shoulder for holding said arm and shoulder sufficiently rigid as to substantially maintain said units at a desired spacing for aircraft wheel carriage gripping, said rearward tongue section being attached to said shoulder, towing hitch means attached to the forward end of said forward tongue section, keeper means operably correlated with said tongue sections and releasably keeping said tongue sections in said towing positions.

4,269,430
SKI BOOT HEEL ATTACHMENT

Nils Eie, Bamseveien 20, Oslo 3, Norway

Filed Jan. 23, 1979, Ser. No. 5,858
Claims priority, application Norway, Jan. 25, 1978, 780281
Int. Cl.[3] A63C 9/10
U.S. Cl. 280—614 18 Claims

1. In combination with a ski boot of the type having a heel formed with at least one forwardly downwardly sloping recess which commences at the rear surface of the heel and terminates at an intermediate point between the rear surface and front surface of said heel:

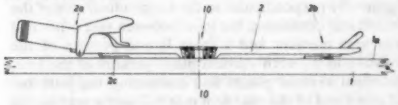
a member attached to and projecting rearwardly from the rear surface of the boot heel, and

locking means for attachment to the ski, said locking means including a forwardly downwardly sloping protrusion for matingly fitting into the recess of the ski boot heel and engaging the heel to provide lateral stability, and also including means for engaging the top of said rearwardly projecting member and locking therewith to prevent movement of the heel upwardly from the face of the ski.

4,269,431
SAFETY SKI BINDING

Erwin Weigl, Brunn am Gebirge, Austria, assignor to TMC Corporation, Baar, Switzerland

Filed Feb. 21, 1979, Ser. No. 13,475
Claims priority, application Austria, Feb. 23, 1978, 1300/78
Int. Cl.[3] A63C 9/08
U.S. Cl. 280—618 9 Claims



1. In a safety ski binding for use on a ski comprising a sole plate having first means thereon for fastening a ski boot thereto and second means operatively releasably coupled to the longitudinal ends of said sole plate for releasably securing said sole plate against rotation and against a lifting off from said ski, a pin means secured to said ski and extending perpendicularly with respect to the upper surface of said ski, and a recess in said sole plate receiving said pin means therein, the improvement comprising wherein said pin means includes a pin secured to said ski and a hollow sleeve movable telescopically along the length of said pin and along the length of said recess and stop means for limiting the maximum path of movement of the sleeve relative to said pin and said recess and to limit the

amount of separation between said sole plate and said ski adjacent said recess and said pin when said ski is flexed into an arc.

4,269,432

INDEPENDENT WHEEL SUSPENSION FOR MOTOR VEHICLES

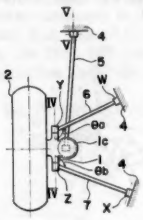
Hitoshi Inoue; Kenichi Watanabe, and Takashi Sumimoto, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed May 17, 1979, Ser. No. 40,084

Claims priority, application Japan, May 24, 1978, 53-62424; Sep. 14, 1978, 53-126795[U]

Int. Cl.³ B60G *3/00*

U.S. Cl. 280—690 **8 Claims**



1. A rear wheel suspension for a vehicle having a vehicle chassis, said suspension comprising: a rear wheel support including a wheel carrier for supporting a rear wheel for rotation independently of the wheel carrier; front and rear arm members for supporting the wheel carrier on the vehicle chassis, each of said front and rear arm members having one end hingedly and yieldingly connected to the wheel carrier and the other end hingedly and yieldingly connected to the vehicle chassis, said front and rear arm members extending laterally in spaced relation to each other between the vehicle chassis and the wheel carrier; said front and rear arm members extending outwardly from the wheel carrier towards the vehicle chassis and diverging from each other with the space therebetween gradually increasing towards the vehicle chassis, the longitudinal straight distance as measured in a direction longitudinally of the vehicle chassis between the first vertical plane generally perpendicular to the longitudinal axis of the vehicle chassis and containing therein the joint between said one end of the front arm member and a front portion of the wheel carrier and a second vertical plane parallel to the first vertical plane and containing the joint between said one end of the rear arm member and a rear portion of the wheel carrier being smaller than the longitudinal straight distance as measured in a direction longitudinally of the vehicle chassis between a third vertical plane generally perpendicular to the longitudinal axis of the vehicle chassis and containing the joint between said other end of the front arm member and a front lateral portion of the vehicle chassis and a fourth vertical plane parallel to the first, second and third vertical planes and containing the joint between said other end of the rear arm member and a rear lateral portion of the vehicle chassis; a connecting member for elastically connecting the wheel support of the vehicle chassis for displacement in a direction generally horizontal and perpendicular to the widthwise direction of the vehicle chassis, said connecting member having one end connected to the vehicle chassis and the other end connected to the wheel carrier; and a shock absorber means for absorbing vibrations of the wheel carrier which may take place in a direction generally at right angles to the road surface during the running of the vehicle; whereby when a load acting in a direction rearwardly of the vehicle is imposed on the area of contact of the rear wheel with a road surface and the wheel carrier is consequently forcibly displaced rearwardly of the vehicle chassis, the wheel carrier is moved such that the toe-in of the wheel support is thereby increased.

4,269,433

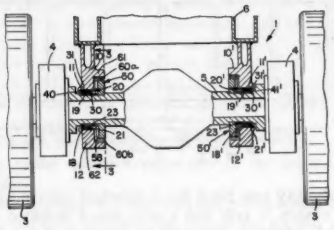
RESILIENT REAR SUSPENSION FOR GRADERS

W. Allan Shears, Divernon, Ill., assignor to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.

Filed Dec. 10, 1979, Ser. No. 101,822

Int. Cl.³ B60G *11/22*

U.S. Cl. 280—716 **17 Claims**



1. A resilient suspension for mounting an axle housing to the frame of a vehicle comprising

trunnion means adapted to be affixed to said vehicle frame,

said trunnion means having a surface to surround at least a portion of the axle housing of the vehicle in spaced relationship thereto,

elastomeric means positioned between said surface of said trunnion means and the portion of the axle housing,

said elastomeric means including an elastomeric section to provide an impedance mismatch between the axle housing and the frame of the vehicle and attenuate the transmission of noise therebetween, and

stability means mounted in concentric coupled relationship to the axle housing and in spaced relationship to said trunnion means to stabilize the mounting of the axle housing to the vehicle frame.

4,269,434

PASSIVE VEHICLE OCCUPANT RESTRAINT LAP AND SHOULDER BELT SYSTEM

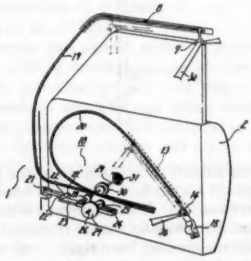
Juichiro Takada, 3-12-1, Shinmachi, Setagayaku, Tokyo, Japan

Filed Feb. 8, 1979, Ser. No. 10,212

Claims priority, application Japan, May 15, 1978, 53-63961[U]

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—803 **4 Claims**



1. In a passive occupant restraint belt system for vehicles which includes a lap belt and shoulder belt, apparatus for moving the lap belt and shoulder belt between occupant-restraining and occupant-releasing positions in response to opening of a door of the vehicle comprising lap belt transfer means engaging the lap belt for moving it from the restraining to the releasing position and including a first racked wire, shoulder belt transfer means engaging said shoulder belt for

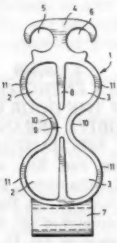
moving it from the restraining to the releasing position and including a second racked wire, rotary drive means having a single output shaft, a first output drive gear element on the output shaft coupled to the first racked wire of said lap belt transfer means and a second output drive gear element on the output shaft coupled to the second racked wire of said shoulder belt transfer means for actuating said first and said second shoulder belt transfer means simultaneously, the first and second output drive gear elements being of different diameters to accommodate different lengths of movement of the respective belt transfer means, and means for operating the rotary drive means responsive to opening of the vehicle door for moving said first and said second belt transfer means from the occupant-restraining to the occupant-releasing position.

4,269,435

FASTENING MEANS FOR SKIS

Juhani Järvenkylä ∂ °övinginkatu 4,, 04100 Lohja 10, and Tapio Yli-Kovero, Metsolankatu 14 D 31, 08150 Lohja 15, both of Finland

Filed Aug. 21, 1979, Ser. No. 68,405
Claims priority, application Finland, Aug. 29, 1978, 782642
Int. Cl.³ A63C *11/02*
U.S. Cl. 280—814 **1 Claim**



1. A clamp for use in holding a pair of skis, comprising a substantially rectangular closed body formed integrally of a resillient material and including two partition tongues extending towards each other from the middle of the short sides of said body, the partition tongues serving as a partition between each ski of the pair of skis, and both of the long sides of said body having an inherent tendency to assume a configuration of at least two outward bows and, between these, at least one inward bow extending to the vicinity of the plane of the tongues for pressing skis inserted in the openings formed on both sides of said tongues against said tongues, the resilient bows and partition tongues providing for variation of opening length and width according to the dimensions of the skis being clamped.

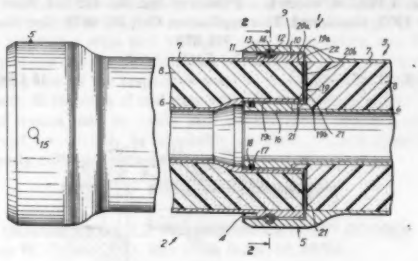
4,269,436

PRE-INSULATED PIPE SYSTEM

Jonas Medney, 3504 Woodward St., Oceanside, N.Y. 11572

Filed Apr. 14, 1980, Ser. No. 139,802
Int. Cl.³ F16L *11/12*
U.S. Cl. 285—47 **16 Claims**

1. A piping system comprising first and second pipes, each pipe including spaced inner and outer pipe members and a foam material filling the space between the inner and outer pipe members, the inner pipe members of the two pipes being adapted for conveying a fluid medium, the inner pipe member of the first pipe having a flared female end, the inner pipe member of the second pipe having a male end inserted in the female end, said foam material in said second pipe being provided with a recess in which said first pipe extends so that the foam material in said first pipe confronts the foam material in said second pipe, the outer pipe member of the first pipe having an annular groove therein which faces outwardly, coupling means surrounding said outer pipe member of said first pipe and having an annular groove therein which faces inwardly and is in registry with said annular groove in said outer pipe member, key means extending in part in each of said grooves for locking said coupling means and said first pipe in axially



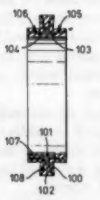
secured relation while permitting relative rotation therebetween, and means securing said coupling means to the outer pipe member of said second pipe such that said second pipe is axially secured to said first pipe.

4,269,437

JOINTING OF PIPES

Douglas W. Shaw, and Richard Gamwell, both of Macclesfield, England, assignors to E. T. Oakes Limited, Macclesfield, England

Filed Oct. 1, 1979, Ser. No. 80,297
Claims priority, application United Kingdom, Oct. 4, 1978, 39270/78
Int. Cl.³ F16L *19/00*
U.S. Cl. 285—109 **6 Claims**



1. A joint for jointing two pipe ends, said joint comprising a resilient T-shaped annular member including a radial portion adapted to extend between the ends of the pipes, two oppositely extending axial portions at the radially inner part of the radial portion, the axial portions each being engageable within the interior of one of the two pipe ends, a metal reinforcement within said resilient annular member, said reinforcement comprising two axially spaced parts each having an axially extending inner arm and a body portion extending radially outwardly therefrom, the two body portions diverging with respect to one another, said body portions including a plurality of radial slits circumferentially spaced from one another and dividing the body portion into circumferentially spaced segments, whereby the axially extending portions of the T-shaped annular member are urged radially outwardly against the inner surface of the two pipe ends, as the two pipe ends are drawn axially towards one another.

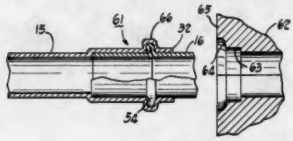
4,269,438
TUBE-TO-TUBE JOINT

Ralph G. Ridenour, 626 Lexington-Ontario Rd., Mansfield, Ohio 44903

Continuation-in-part of Ser. No. 527,683, Nov. 27, 1974, Pat. No. 4,200,314, which is a division of Ser. No. 425,561, Nov. 17, 1973, abandoned. This application Oct. 16, 1978, Ser. No. 951,579

Int. Cl.³ F16L *13/14*

U.S. Cl. 285—382.2 **15 Claims**



1. A tube-to-tube joint comprising, in combination,

a first tube and a second tube each having an outer wall and an inner wall,

said second tube having a main body and having an end portion,

said first tube having a main body and having a first portion near one end thereof telescoped over said end portion of said second tube,

means establishing a first shoulder fixed relative to said first tube and having an outer surface radius substantially equal to the outer surface radius of the end of said second tube,

means establishing a second shoulder on said first portion of said first tube closer to said one end of said first tube than said first shoulder,

each of said shoulders being transverse to the axis of said first tube,

the inner wall of said first tube first portion being substantially cylindrical and having a diameter slightly larger than the nominal diameter of the outer wall of said second tube end portion,

said end portion of said second tube abutting said first shoulder,

at least a first annular area on said second tube inner wall being bulged outwardly and forming a radially enlarged annular bead on the outer wall of said second tube, said annular bead including first and second portions of the second tube inner wall axially contracted and folded into mutual engagement,

non-welded fluid seal means acting between said annular bead and one of said shoulders to seal a substantial fluid pressure of at least several atmospheres,

said first tube having a second portion enlarged relative to said first tube first portion,

said radially enlarged bead being formed within and being radially inwardly constrained by said first tube second portion to form a part of said fluid seal means,

and said first portion of said first tube having a wall thickness substantially equal to the wall thickness of the main body of said first tube.

4,269,439
DOOR HOLDBACK DEVICE

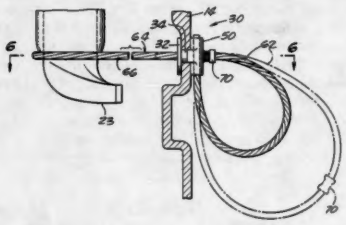
James M. Warwick, Whittier, and David C. Liu, Walnut, both of Calif., assignors to Utility Trailer Manufacturing Company, Industry, Calif.

Filed Jul. 30, 1979, Ser. No. 61,921

Int. Cl.³ E05C *19/10*

U.S. Cl. 292—246 **11 Claims**

1. In a holdback device for holding a door or panel in open position with respect to a wall of a highway vehicle or the like, the improvement comprising, in combination: a bracket for attachment to the wall, a flexible loop, means for attaching said flexible loop to said bracket to create an internal flexing stress in said loop, whereby in a first position said loop extends from said wall to engage an element on said door or panel, and in a



second position said loop retracts into closer proximity with the wall solely caused by internal flexing stress existent within said loop.

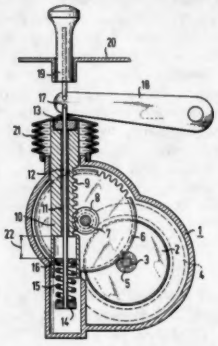
4,269,440
ELECTRICALLY ENERGIZED OPERATING MECHANISM FOR THE DOOR OF A VEHICLE AND THE LIKE, AND DRIVE ARRANGEMENT FOR THE MECHANISM

Egon Gelhard, Cologne, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Continuation of Ser. No. 865,939, Dec. 30, 1977, abandoned, which is a continuation-in-part of Ser. No. 739,818, Nov. 8, 1975, abandoned. This application Jul. 11, 1979, Ser. No. 56,519

Int. Cl.³ E05C *13/04*

U.S. Cl. 292—336.3 **32 Claims**



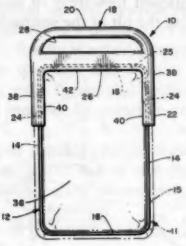
1. A drive mechanism for driving an operating member comprising: drive means; energy storage means connected to receive energy from said drive means; an output member for transmitting energy from said drive mechanism to an operating member to be driven thereby; and transmission means for transmitting driving energy to said output member from both said drive means and said energy storage means; said transmission means being arranged to delay transmission of energy to said output member until said drive means has undergone a number of revolutions and to effect commencement of transmission of driving energy to said output member independently of the angular velocity of said drive means when said drive means has undergone said number of revolutions.

4,269,441

TRASH BAG HOLDER

Henry M. Hirsch, 104 Wilderness Rd., Rancho Cordova, Calif. 95670

Filed Dec. 26, 1979, Ser. No. 107,188
Int. Cl.[3] A47F *13/06*
U.S. Cl. 294—1 R 7 Claims



1. A novel trash bag holder adapted to retain a trash bag in open position for the collection of debris without the necessity of bending or lifting, which comprises in combination:

a frame formed of relatively slender pieces joined to surround an empty space, and adapted to house a trash bag inserted through said space and spread over said frame for mounting,

a handle means engageable with said frame to retain said mounted bag on said frame,

said handle means comprising a handle portion having two frame receiving sections descending downwardly therefrom, said frame receiving section adapted to engage said frame,

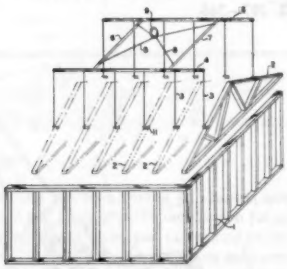
wherein each frame receiving section has a groove therein slidingly engageable with a piece of said frame.

4,269,442

ROOF TRUSS SUSPENSION

William R. Craig, 1717 Golden Mile Hwy., Monroeville, Pa. 15146

Filed Feb. 4, 1980, Ser. No. 118,574
Int. Cl.[3] B66C *1/14*
U.S. Cl. 294—81 R 1 Claim



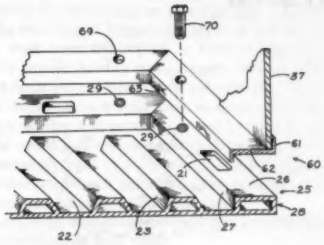
1. A rig for simultaneously setting a plurality of roof trusses on a building framing, comprising a pair of horizontally extending, spaced parallel beams adapted to extend over the respective central portions of the sloping sides of said trusses, a pair of cross beams at right angles to said beams and having ends connected to intermediate portions of said beams so as to provide overhanging extensions of said first mentioned pair of beams, a plurality of spaced vertical flexible linkage means suspended from each of the four overhanging extensions, and a plurality of spaced vertical flexible linkage means suspended from the intermediate remaining portions of said first mentioned pair of beams, and suspending means for support by the hook of a crane, said suspending means comprising four flexible linkage means extending from said hook and connected to end portions of each of said cross beams, a substantially U-shaped rod with parallel sides, which rod is attached to the lower extremity of each of said vertical flexible linkage means to enable the lower end portions of the vertical flexible linkage means to wrap around the central portion of the sloping side of the respective truss and to be secured by inverting said U-shaped rod and snugly encircling it over the top of the central sloping side of the respective truss so that said parallel sides closely fit the sides of said truss whereby the entire plurality of roof trusses may be easily and quickly lifted, lowered and moved horizontally to adjustably set them in place simultaneously on said building framing.

4,269,443

MOTOR VEHICLE WITH CONVERTIBLE BODIES

Gary W. Farmer, P.O. Box 4907, Boise, Id. 83704

Filed Jan. 2, 1979, Ser. No. 209
Int. Cl.[3] B62D *35/00*
U.S. Cl. 296—1 S 4 Claims



1. In combination with a cargo vehicle:

a substantially rectangular flat bed adapted to securely engage the chassis of the vehicle, said bed including a raised peripheral sill having a plurality of horizontally spaced, vertically disposed, threaded apertures;

a rigid cargo container unit having vertical walls engaging a horizontally extending peripheral shoulder adapted to mate with the sill, the shoulder including a plurality of horizontally spaced, vertically disposed, apertures adapted to vertically align with the apertures of the sill of said bed when the container shoulder and bed sill are in mating position; and

a plurality of threaded bolts receivable in the threaded apertures of said sill and operable to secure said cargo container to said bed, wherein the sill of said bed includes a substantially planar top surface and a substantially vertical interior edge and wherein the shoulder of said cargo container contains a substantially planar bottom surface and a downwardly depending interior flange operable to abut the vertical edge of the sill and an oppositely disposed, upwardly extending exterior flange operable to abut the exterior surface walls of said cargo container.

4,269,444

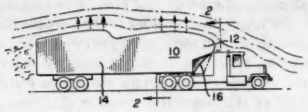
APPARATUS FOR REDUCING AERODYNAMIC DRAG

Jack L. Emory, P.O. Box 2916, Taos, N. Mex. 87571

Continuation of Ser. No. 906,704, May 17, 1978, abandoned.
This application Nov. 29, 1979, Ser. No. 98,426
Int. Cl.[3] B60J *1/04*
U.S. Cl. 296—1 S 6 Claims

1. A cargo carrying vehicle body such as a trailer of a tractor trailer rig comprising, a wheel-mounted floor portion, two side wall portions, an upper wall, and a forward portion, wherein at least a first portion of said upper wall and said forward portion together form in side elevational view a curved contour ex-

tending for the entire width of said trailer from one of said two side wall portions to the other of said two side wall portions to define an airplane wing section having a "square" appearance



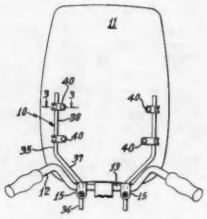
in plan view which provides a high-lift surface with low drag effect, and said forward portion also has a lower surface of such height as to clear a cab for towing the tractor during turns or maneuvers.

4,269,445

WINDSHIELD MOUNTING ASSEMBLY

Lawrence J. Gager, Jr., P.O. Box 16212, Jacksonville, Fla. 32216

Filed Dec. 13, 1978, Ser. No. 969,084
Int. Cl.³ B62J *17/04*
U.S. Cl. 296—78.1 **13 Claims**



1. In a windshield mounting assembly, a U-shaped clamp comprising spaced end portions and an intermediate portion including a passage extending therethrough for receiving an elongated support rod therethrough, said passage including a longitudinal axis spaced from said clamp end portions, each of said end portions including a passageway extending therethrough for receiving a windshield connecting and supporting means therethrough, said passageways having aligned longitudinal axes substantially perpendicular to said longitudinal passage axis, each said end portion including inner and outer surfaces, one of said end portions including a recessed pocket provided in said outer surface and communicating with said one end portion passageway, said inner surfaces of said end portions define a closeable slot therebetween and said longitudinal axes of said end portions being substantially coincident, and a windshield connecting and supporting means passing through said passageways and attachable to and through an aligned opening in a windshield positionable closely adjacent to one said end portions.

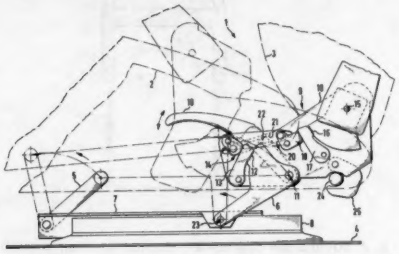
4,269,446

DISPLACEABLE SEAT FOR AUTOMOTIVE VEHICLES

Klaus Gersmann, Wulfertshausen, and Oskar Gruber, Garching, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 21, 1979, Ser. No. 22,488
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1978, 2813534
Int. Cl.³ A47C *1/032*
U.S. Cl. 297—341 **9 Claims**

1. A seat for an automotive vehicle, such as a passenger car, comprising a seat part and a seatback, means connecting the seat part with the floor of the vehicle to permit vertical adjustment of the position of the seat and forward displacement of the seat part when the seatback is tilted forward toward the seat part, said connecting means including spaced apart first and second guide means which are essentially parallel and which extend between and are pivotably connected to said seat part and respective pivot means adjacent the vehicle floor, said first guide means being connected to said seat part at its rear in the area of the lower end of the seatback and said second guide means being positioned forwardly of said first guide means, means for adjusting the tilt of the seatback relative to the seat



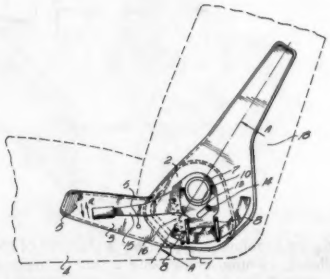
part, said means for adjusting the tilt of the seatback relative to the seat part including a seatback fitting which extends between and is pivotably connected to said seatback and said seat part, locking means coupling said first guide means and said seatback fitting for rotation so that with forward tilting motion of the seatback and the seatback fitting the seat part is displaced forwardly, said locking means being adjustable in its position for vertically adjusting the position of the seat, and releasable tilt blocking means for preventing rotation of the coupled first guide means and seatback fitting.

4,269,447

DEVICE FOR THE REGULATION OF THE POSITION ON THE BACK OF RECLINING SEATS

Roberto B. Dottori, Buenos Aires, Argentina, assignor to Grinfa Sociedad de Responsabilidad Limitada, Capital Federal, Argentina

Filed Nov. 12, 1976, Ser. No. 741,581
Claims priority, application Argentina, Nov. 13, 1976, 261174
Int. Cl.³ A47C *3/22*
U.S. Cl. 297—365 **6 Claims**



1. Apparatus for adjusting the back of a reclining seat, comprising:

(a) a fixed member attached to said seat;

(b) a movable member mounted on the reclining back of said seat;

(c) a cylindrical bushing integral with and projecting concentrically from an orifice in the central portion of said fixed member;

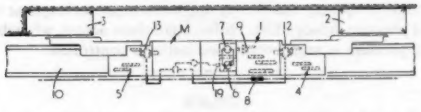
(d) an axle mounted in said cylindrical bushing for rotatably connecting said movable member to said fixed member;
(e) a pair of substantially parallel projections on the lower portion of said fixed member;
(f) a restraining member slidably arranged on said fixed member between said projections and having a notch in its upper portion for receiving said cylindrical bushing;
(g) the lower portion of said restraining member being formed as a ridge with a toothed outer edge;
(h) a circular sector fixedly attached adjacent the lower edge of said movable member, said circular sector having a toothed interior edge facing said toothed outer edge of said restraining member for selective engagement therewith;
(i) an actuating lever rotatably mounted coaxially with said movable member on the end of said cylindrical bushing for upward and downward movement into unlocked and locked positions, respectively;
(j) a diagonal slot in the central portion of said restraining member; and
(k) a pin integral with said actuating lever and slidably received in said diagonal slot;
(l) whereby movement of said actuating lever causes longitudinal displacement of said restraining member to effect disengagement of said toothed portions.

4,269,448

MINERAL MINING MACHINE CUTTER DRIVING MECHANISM HAVING A LOAD SENSING DEVICE TO REGULATE THE HAULAGE SPEED OF THE MACHINE WHEN THE CUTTER DRIVING MECHANISM IS OVERLOADED

Samuel L. Wilson, Wishaw, Scotland, assignor to Anderson Strathclyde Limited, Glasgow, Scotland

Continuation of Ser. No. 850,305, Nov. 10, 1977, abandoned. This application Jun. 12, 1979, Ser. No. 47,915
Claims priority, application United Kingdom, Nov. 11, 1976, 47099/76
Int. Cl.³ E21C *29/02*
U.S. Cl. 299—1 **7 Claims**



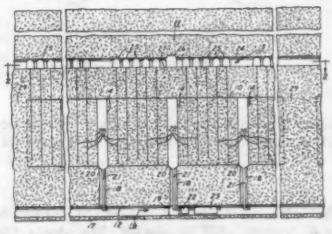
1. A mineral mining machine having an electric motor, at least one cutter unit and haulage drive mechanism for moving the machine along a mineral face, said cutter unit including a cutter element and a variable speed gear-train interposed between said electric motor and said cutter element to drive said cutter element, torque sensing means associated with part of said cutter gear-train to sense the torque transmitted by said gear-train and to provide a signal when the torque transmitted by said gear-train exceeds a predetermined level, load sensing means associated with said electric motor responsive to current flow through said electric motor to provide a signal, said haulage mechanism having an hydraulic motor, a source of hydraulic fluid, a variable output pump for feeding said hydraulic fluid to said motor, and control means in an hydraulic circuit responsive to said signals from the torque and load sensing means to control the hydraulic pump output and thereby effect reduction of the haulage speed.

4,269,449

METHOD FOR PREPARING AN OIL SHALE DEPOSIT FOR IN SITU RETORTING

Salvador M. del Rio, Golden, Colo., assignor to Mineral Industries Engineers, Inc., Golden, Colo.

Filed Oct. 12, 1978, Ser. No. 950,801
Int. Cl.³ E21C *41/10*
U.S. Cl. 299—2 **25 Claims**



1. The method for preparing an underground oil shale deposit for in situ retorting of fragmented shale which comprises:
excavating shale from the deposit to form at least one void within the deposit having an aggregate volume sufficient to form a retort to contain and be substantially filled with the shale adjacent such void after its fragmentation,
excavating a drilling and process control level underground above the retort and separated from the roof of the retort by a substantial depth of overburden, constituting a horizontal pillar to protect personnel and equipment during fragmentation and retorting of the shale,
drilling holes from said level through the overburden into the deposit adjacent said void,
placing explosive charges in said holes within the deposit,
casing and valving selected ones of said holes within the horizontal pillar and plugging the remaining holes therein,
setting off said charges for fragmenting the shale adjacent such void and filling the retort with fragmented shale,
extending selected ones of said cased holes into the fragmented shale to selected depths,
heating the shale in the retort to a temperature sufficient to release shale oil therefrom,
utilizing said ones of said cased holes for facilitating the monitoring and control of the retorting of the fragmented shale in the retort,
retorting above ground shale removed from the voids during excavation thereof,
grinding the spent retorted shale,
forming a water slurry with the ground retorted shale and pumping the slurry through said extended selected ones of said cased holes into the body of spent fragmented shale at the selected depths in the retort to fill the voids therein and thereby reduce the likelihood of eventual surface subsidence over the retort.

4,269,450

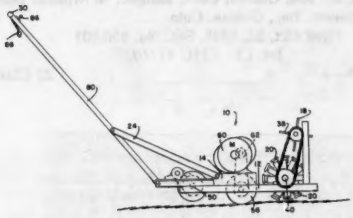
ASPHALT SHINGLE REMOVER AND DEROOFER APPARATUS

Woodrow W. Welborn, Rte. 9, Box 375, Laurel, Miss. 39440

Filed May 30, 1979, Ser. No. 43,668
Int. Cl.³ E04D *15/00*; A47L *11/14*
U.S. Cl. 299—39 **5 Claims**

1. An improved asphalt shingle remover and deroofer apparatus comprising
a horizontally disposed U-shaped main frame drive means mounted on opposite sides of the frame and being driven by said drive menas mechanically coupled thereto,
an arrangement of a plurality of cutter heads mounted affixedly onto a rotating shaft driven by said drive means,
a driven flapper reel means rotatably mounted parallel to the

rotating shaft for knocking out of the way the shingles that collect and become attached to the flapper reel means, and



side cutter means being additionally end mounted on the rotating shaft with the rotatably mounted cutter heads.

4,269,451

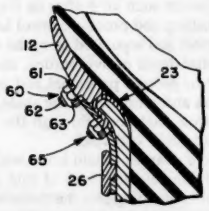
WHEEL AND TIRE BALANCING SYSTEM

Rajendra K. Narang, 1525 Bonnie Rd., Macedonia, Ohio 44056

Continuation-in-part of Ser. No. 807,371, Jun. 17, 1977, abandoned. This application Aug. 4, 1978, Ser. No. 931,205

Int. Cl.³ B60B *13/00*

U.S. Cl. 301—5 B **15 Claims**



1. In combination with a wheel having a rim upon which a tire is mounted, means to balance such wheel comprising at least one weight having a main body portion that is elongated, clip means cooperating with said main body portion to mount the weight to the rim so that the elongated main body portion extends predominantly radially of the wheel and tire, a mounting strap having the main body portion connected to the radially outer end thereof and the clip means to an intermediate portion thereof, and a counterbalancing body on the radially inner end of the mounting strap to increase the effective radial length of the weight.

4,269,452

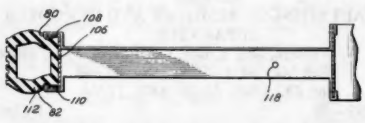
SPOKE WHEEL ASSEMBLY

Donald R. Frush, 1704 E. Sheridan, Warsaw, Ind. 46580

Filed Oct. 17, 1979, Ser. No. 85,698

Int. Cl.³ B60B *1/06*

U.S. Cl. 301—6 R **12 Claims**



1. A spoked wheel comprising an annular rim having first and second ends held in opposed relationship and having a bottom panel and side flanges extending outwardly therefrom to form a channel in which a tire can be mounted, a hub centrally located within said annular rim for receiving a shaft on which the wheel is mounted, and a plurality of spokes attached to said hub and said annular rim, each spoke having a first crimp type attachment means for securing said spoke to said rim, a second crimp type attachment means for securing said spoke to said hub, a central panel between said first and second crimp type attachment means, and flanges on said central panel extending laterally from the edges thereof.

4,269,453

BRAKE PRESSURE CONTROL VALVES

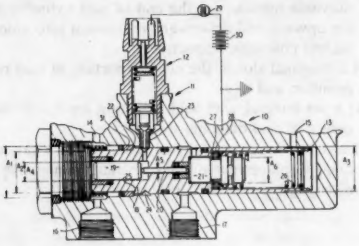
Patrick F. Sawyer, Prestons, Australia, assignor to Girlock Limited, New South Wales, Australia

Filed May 30, 1979, Ser. No. 43,629

Claims priority, application Australia, Jun. 8, 1978, PD4649

Int. Cl.³ B60T *8/26*

U.S. Cl. 303—6 C **4 Claims**



1. A combined pressure differential warning actuator and pressure conscious reducing valve for a fluid pressure operated dual braking system comprising a housing, a bore in said housing, first piston means axially movable in the bore, a first fluid pressure inlet to said bore, a second fluid pressure inlet to said bore, a first fluid outlet from said bore for connection to an actuator for a first set of brakes, a second fluid outlet from said bore for connection to an actuator for a second set of brakes, electric switch means actuable by movement of said first piston means caused by a fluid pressure differential between said inlets, valve means arranged within said first piston means for controlling flow between said second fluid inlet and said second fluid outlet to reduce pressure to said second outlet, said second fluid outlet being the only fluid outlet from said housing in fluid communication with said second fluid inlet, second piston means subject to pressure of said first and second inlets and including a spring, said second piston means contained within said first piston means and axially movable in relation thereto for opening and closing said valve means in response to fluid pressure induced force differentials there across, whereby fluid pressure at said second fluid outlet is controlled.

4,269,454

ANTI-SKID BRAKE CONTROL SYSTEM

Alfred K. White, Birmingham, and Malcolm Brearley, Solihull, both of England, assignors to Girling Limited, Birmingham, England

Filed Aug. 9, 1978, Ser. No. 932,306

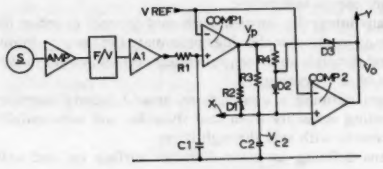
Claims priority, application United Kingdom, Aug. 10, 1977, 33456/77

Int. Cl.³ B60T *8/08*

U.S. Cl. 303—97 **11 Claims**

1. An anti-skid brake control system including sensor means that produces a first signal which is proportional to the acceleration of a braked wheel, switch means that produces a second signal and which responds to said first signal by causing a step change in said second signal at set acceleration levels so as to divide successive skid cycles into successive acceleration periods separated by intermediate periods, means for integrating said second signal so as to produce an output signal which changes in a progressive manner in one sense during each acceleration period and in the opposite sense during each

intermediate period so as to vary in accordance with surface friction conditions, and output connection means whereby said



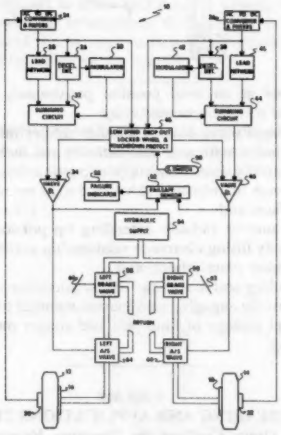
output signal is used to vary a control function within the system so that the said control function is set in accordance with said surface friction conditions.

4,269,455

ANTISKID BRAKE CONTROL SYSTEM

Arnold A. Beck, Clinton, and Edgar J. Ruof, Akron, both of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Aug. 14, 1978, Ser. No. 933,349
Int. Cl.³ B60T *8/08*
U.S. Cl. 303—106 **22 Claims**



1. An antiskid system for assisting in controlling the application and release of brake pressure applied to the wheel of a vehicle, comprising:

first means operatively connected to the wheel for producing an output signal indicative of the instantaneous rotational speed of the wheel;

second means connected to and receiving said output signal from said first means for producing a deceleration signal corresponding to the instantaneous rate of deceleration of the wheel; and

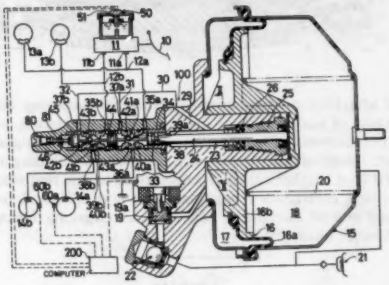
a modulator interconnected between said second means and a summing circuit, said summing circuit summing signals from said modulator and second means, and producing an aggregate signal, said summing circuit including an amplifier receiving said aggregate signal, said amplifier having connected thereto means for reducing the gain of the antiskid system when said aggregate signal exceeds a predetermined threshold level.

4,269,456

ANTI-SKID BRAKE PRESSURE CONTROL SYSTEM WITH COMMON SOLENOID VALVE

Toshiyuki Kondo, Anjo, and Masamoto Ando, Toyota, both of Japan, assignors to Aisin Seiki Company, Limited, Kariya, Japan

Filed Oct. 5, 1978, Ser. No. 948,915
Claims priority, application Japan, Oct. 5, 1977, 52-120268; Oct. 20, 1977, 52-126280; Dec. 22, 1977, 52-154957
Int. Cl.³ B60T *8/02*
U.S. Cl. 303—115 **13 Claims**



1. An anti-skid brake pressure control system which comprises:

a first brake pressure supply line communicating a first source of a tandem master cylinder with a first wheel cylinder,

a second brake pressure supply line communicating a second source of the tandem master cylinder with a second wheel cylinder,

first cut-off valve means arranged within said first supply line and normally maintained in its open position,

second cut-off valve means arranged within said second supply line and normally maintained in its open position,

servo means having a power piston to thereby define first and second chambers,

a single solenoid valve actuated in response to a wheel locking condition to thereby create a pressure differential between said first and second chambers and to thereby actuate said power piston,

brake pressure reducing means comprising a housing including a variable volume bore provided therein and a pressure reducing piston mounted in said housing movable in response to movement of said servo means to increase an effective volume of said variable volume bore, and

pressure reducing valve means mounted in said housing operated in response to movement of said pressure reducing piston to bring both of said wheel cylinders into communication with said variable volume bore, and

means for operating said first and second cut-off valve means in response to operation of said brake pressure reducing means to thereby interrupt hydraulic communication between first and second sources and said first and second wheel cylinders, respectively.

4,269,457

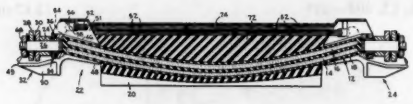
ENDLESS TRACTION BAND SUPPORT APPARATUS

James S. Farrior, Huntsville, Ala., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Oct. 4, 1979, Ser. No. 81,927
Int. Cl.³ B62D *55/20, 55/24*
U.S. Cl. 305—11 **5 Claims**

1. Traction apparatus for a vehicle comprising first and second roller chains, means for supporting said roller chains on said vehicle for movement on parallelly spaced apart congruent paths which paths include a linear portion beneath the

vehicle, a resilient endless band having a length corresponding to that of said roller chains and a width such as to span the space between said roller chains, said band having a convex outer surface and a concave inner surface and being resiliently deformable in response to loads imposed thereon, and means for attaching respective side edges of said band to respective said roller chains so that in response to movement of said roller chains along said paths said band will correspondingly move,



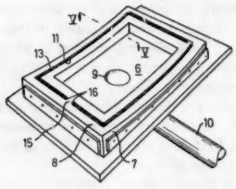
said attaching means including means for engaging the side margins of said band, said engaging means including a body portion outward of said band, said body portion having at least a first spherical hole therein, said roller chain including at least a first stud, a spherical enlargement fixed to said first stud, said spherical enlargement engaging said first spherical hole to afford pivotal movement between said engaging means and said roller chain.

4,269,458

HYDROSTATIC BEARING, ESPECIALLY FOR A ROTATING DRUM

Curt S. Olsson, Vallentuna; Olle Widerström, and Lars E. Kilian, both of Nälden, all of Sweden, assignors to Waplans Mekaniska Verkstads AB, Nalden, Sweden

Filed Jun. 5, 1979, Ser. No. 45,767
Claims priority, application Sweden, Jun. 19, 1978, 7806993
Int. Cl.[3] F16C *32/06, 39/04*
U.S. Cl. 308—9 **12 Claims**



1. Hydrostatic bearing, especially for rotatable bearing of a drum, comprising at least one bearing box limited by outer edges, with an arcuate bearing surface to fit a circular bearing surface on the drum, the bearing box having a fluid inlet opening inside the edges, characterized in that the bearing surface of the bearing box is made with at least one groove, in which at least one sealing strip is movably laid, means being provided to establish fluid communication between the space surrounded by said edges and said groove in order to create a fluid pressure in the groove, which presses the sealing strip against the bearing surface of the drum.

4,269,459

WHEEL BEARING SLINGER RING

Clifton S. Peck, Trenton, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

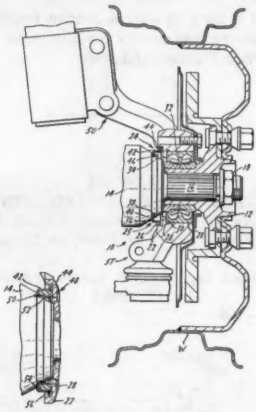
Division of Ser. No. 973,059, Nov. 26, 1978. This application Mar. 10, 1980, Ser. No. 129,131
Int. Cl.[3] F16C *33/78*
U.S. Cl. 308—36.4 **11 Claims**

1. In a wheel bearing assembly for a vehicle having an inner axle member, an outer journal member supported by the body of the vehicle, a bore formed through the journal member, a bearing carried in the through bore for rotatively supporting the axle member, and annular slinger ring means operatively carried intermediate said axle member and said journal member for preventing the ingestion of contaminating fluid from outside the assembly into the bearing, an improvement wherein said slinger means comprises:

A. means integrally formed with said journal member for defining an annular shoulder proximate the inner terminus of said through bore for preventing certain inward movement of said bearing;

B. means defining a counterbore in said journal member extending inwardly from said shoulder and substantially concentric with said through bore;

C. means defining an outer diameter surface on said axle



member at an axial position proximately inboard said journal member counterbore;

D. a generally cup-shaped annular slinger member carried for rotation with said axle member and including

1. an axially extending support portion received in interference fit relationship on said axle member diametral surface; and

2. an annular radially extending tip portion received in closely fitting clearance relationship within said journal member counterbore; and

E. secondary seal means carried by said slinger member and operatively engaging said journal member to substantially prevent passage of fluid past said slinger member to said bearing.

4,269,460

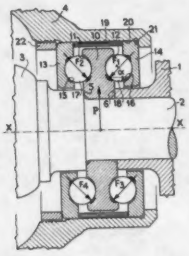
BALL BEARING AND APPLICATIONS THEREOF

Michel A. Orain, Conflans Ste Honorine, France, assignor to Glaenzer Spicer, Poissy, France

Filed Nov. 13, 1978, Ser. No. 959,779
Claims priority, application France, Nov. 14, 1977, 77 34166
Int. Cl.[3] F16C *19/18*
U.S. Cl. 308—233 **18 Claims**

1. In a structure comprising a first element having an axis, a second element rotatable relative to said first element about said axis, and a radial rolling bearing assembling said first element with said second element, said bearing being capable of withstanding loads of variable direction and comprising an inner ring and two axially spaced outer rings defining with the inner ring at least two pairs of raceways, means fixing a first radial end of said inner ring to one of said elements, spacer means maintaining a predetermined axial spacing between a radial end of the outer rings opposed to said first radial end of said inner ring, clamping means urging said end of both said outer rings toward each other, retaining means axially retaining said outer rings and said spacer means relative to the other of said elements, two rows of spherical balls interposed be-

tween and rollingly engaging respective pairs of said raceways, the two raceways associated with each row of balls comprising two annular concave bearing surfaces which are substantially symmetrical with respect to a plane perpendicular to the axis of the bearing, the cross-sectional shape of each of said bearing surfaces in any diametral plane containing said axis being a single arc having a radius which is at least substantially constant and which is slightly larger than the radius of the balls and subtends a central angle of at least substantially 120°, said arc being substantially symmetrical relative to a line which



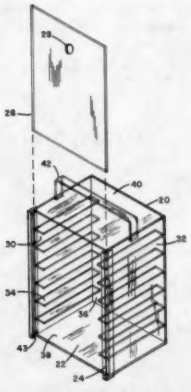
intersects the centre of said radius of the arc and is normally parallel to said axis, and said cross-sectional shape resulting in a sole point of tangency between each ball and each bearing surface, and wherein substantially said entire outer rings are capable of resilient axial flexure in operation of the hearing sufficient to allow said inner ring to move radially relative to said outer rings and to allow said point to change its location without clearance on substantially the whole of the arc as the ball rolls around the bearing surface in accordance with the conditions of operation of the bearing.

4,269,461

CHRISTMAS TREE TRIM CABINET

Bobbie R. Roach, Jr., 621 Dunwich Way, Baltimore, Md. 21221

Filed Aug. 2, 1979, Ser. No. 63,077
Int. Cl.³ A47F *3/00*
U.S. Cl. 312—244 **3 Claims**



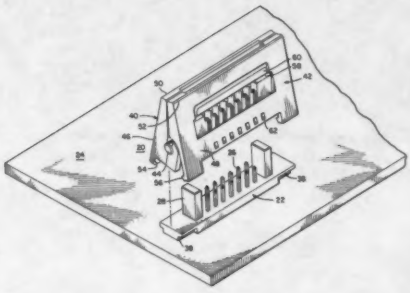
1. A cabinet for display, storage and shipment of Christmas tree balls comprising, in combination: an open-front box structure, a door, vertical flange structure slidably holding the door in position for closing the open front, a plurality of shelves fixed within the open-front box structure, a plurality of drawers held by the shelves, each drawer having a grid of recesses proportioned for holding and cushioning Christmas tree balls in the top surface of the drawer, the open front box structure having transparent left and right sides, back and top, the door being transparent, each said drawer being a styrofoam slab, and the shelves being ledge-like and including a respective plurality thereof running from front to back of the cabinet on each of said transparent left and right sides.

4,269,462

ZERO INSERTION FORCE CONNECTOR

Gary C. Bethurum, El Segundo, Calif., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Sep. 21, 1979, Ser. No. 77,645
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—74 R **12 Claims**



1. A zero insertion force connector, comprising:
a center member supporting a plurality of deflectable electrical contacts and having at least one opening therein in communication with said contacts for receiving therein a plurality of conductive members;
a first side member coupled to end portions of a first plurality of said electrical contacts;
a second side member coupled to end portions of a second plurality of said electrical contacts;
at least one of said side members having therethrough an aperture for passage of a cable, said aperture communicating with an uncoupled end of each of said first and second pluralities of electrical contacts;
said side members each having corresponding first and second distal ends, said side members being pivotally coupled to said center member at a location between said first and second distal ends to allow movement of a first end toward and away from the corresponding other first end when a second end is moved respectively away from and toward the other corresponding second end, said first and second pluralities of electrical contacts being movable relative to said opening with the movement of said side members.

4,269,463

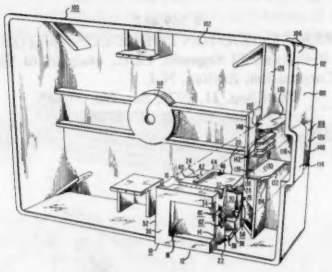
CONNECTOR

Charles M. Beatenbough, Westfield, Ind., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 13, 1979, Ser. No. 57,334
Int. Cl.³ H01R *13/62*; H02B *1/10*
U.S. Cl. 339—91 R **18 Claims**

1. A connector (**10**) comprising:
a dielectric enclosure (**12**) having a front (**14**) and a rear (**16**), the enclosure comprising:
a plug receiving cavity (**30**) having an entrance open to the front of the enclosure;
forward extending flanges (**32**) having front facing flange surfaces (**38**); and
rear surface means (**42**) having rear facing surfaces, the front facing surfaces and the rear facing surfaces respectively engaging and separating corresponding surface means (**106, 130**) in a housing (**100**) during insertion of the enclosure into the housing so as to permit the enclo-

sure to move into a predetermined position in the housing behind a housing wall (**106**) having an aperture (**108**) where the entrance of the cavity is aligned with the aperture, the flanges are situated within the perimeter of



the aperture, and the enclosure is maintained in the predetermined position by interior surface means (**132**) displaced rearwardly from the wall; and

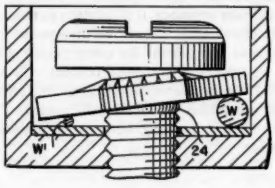
a plurality of contact structures (**64**) carried by the enclosure.

4,269,464

TILTING TERMINAL CLAMP

Donald R. Veldman, Oak Lawn, Ill., assignor to Howard S. Langdon, River Forest, Ill.

Filed Jul. 30, 1979, Ser. No. 61,656
Int. Cl.³ H01R *4/44*
U.S. Cl. 339—95 R **3 Claims**



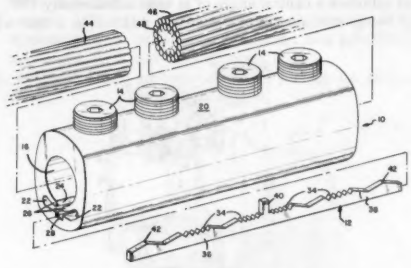
1. A tilting terminal clamp comprising an elongated shank having a slotted head at one end and a lead point at the other end, said shank being equipped with threads extending from said lead point toward said head but terminating in an annular ring a spaced distance from said head, a clamping plate substantially centrally apertured to loosely and tiltably receive said shank and mounted on said shank between said head and said annular ring, said plate being equipped with an integral frusto-conical annulus about said aperture projecting toward said head and presenting a concave surface confronting said annular ring, said annulus being sized and shaped to substantially receive said ring, said plate having a lower serrated surface, the serrations being generally radial and including flats therebetween, said serrations flaring in width as they proceed outwardly from the central aperture of said plate and said serrations terminating short of the periphery of said clamping plate to provide a flat border.

4,269,465

SPLICE CONNECTOR FOR ALUMINUM WIRE

Arthur L. Mueller, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 26, 1979, Ser. No. 108,731
Int. Cl.³ H01R *4/36*
U.S. Cl. 339—95 R **3 Claims**



1. A connector for splicing two electrical wires together, comprising:

a. an elongated tube having a first, wire-receiving passage extending longitudinally therethrough and a second, parallel passage positioned immediately below the first passage, futhermore, a slot cutting longitudinally through the wall between the two passages thereby forming the wall remnants into two cantilever beams running the length of the passages, said tube further having a plurality of threaded openings which intersect the first passage at a location opposite the slot, said threaded openings adapted to receive set screws;

b. a plurality of set screws threadedly positioned in the threaded openings in the tube;

c. an elongated sliding bar of conducting material having a plurality of teeth along one surface positioned within said second passage with the teeth projecting upwardly between the cantilever beams, so that as wires, which may be positioned in the tube, are pushed down by the set screws, the cantilever beams resiliently bend downwardly into the second passage and thereby exert upward pressure on the wires, and the teeth on the sliding bar grip the wires to establish electrical contact and mechanical retention between the wires, the tube and the bar.

4,269,466

CONNECTOR AND STRAIN RELIEF FOR FLAT TRANSMISSION CABLE

John H. Huber, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 23, 1979, Ser. No. 97,072
Int. Cl.³ H01R *13/58*
U.S. Cl. 339—107 **12 Claims**

1. An electrical connector for terminating a plurality of conductors in a transmission cable, comprising:

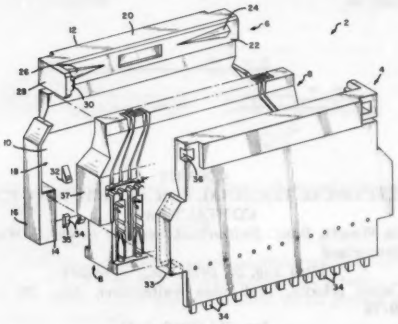
a connector body having a conductor receiving end, a profiled mating end opposite said conductor receiving end, and oppositely directed surfaces extending from said conductor receiving end to a position adjacent said mating end;

said connector body having terminal means proximate said profiled mating end and each said surface of said body having conductor channeling means extending from said conductor receiving end for directing selected ones of said conductors therealong into terminated engagement with said terminal means;

a pair of profiled connector covers each mounted in apposition to a respective one of said connector body surfaces, and each said cover having profiled latching means engaging said body, and profiled strain relief means at a rear-

ward end projecting beyond said conductor receiving end of said body;

said strain relief means comprising an integrally formed transverse ridge extending partially across an inwardly directed surface of said each cover, and an integral transverse recess within said cover surface extending partially



thereacross generally in colinear alignment with said transverse ridge, said ridge of one said cover opposing said recess of the opposite said cover and being spaced apart therefrom so that a cable portion constrained therebetween adopts the ridged and recessed profile of each said connector cover in a clamped engagement with said covers.

4,269,467

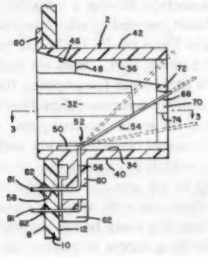
ELECTRICAL CONNECTOR RECEPTACLE HAVING MOLDED CONDUCTORS

Donald W. K. Hughes, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 23, 1979, Ser. No. 87,379

Int. Cl.³ H01R *13/405*

U.S. Cl. 339—126 R **10 Claims**



1. An electrical connector receptacle of the type comprising an insulating housing having a plug-receiving end and a rearward end, a plug-receiving opening extending through said housing from said plug-receiving end to said rearward end, said opening having opposed internal sidewalls and opposed internal endwalls, said housing having oppositely directed external sidewalls and oppositely directed external endwalls, a group of electrical connectors in side-by-side spaced-apart relationship, each of said conductors comprising a first end portion which serves as a contact spring extending from one of said internal sidewalls diagonally into said opening and towards said rearward end, an intermediate portion extending through said housing, and a second end portion which extends externally of said housing, said plug-receiving opening being dimensioned to receive a connector plug having spaced-apart contact members therein which engage said contact springs, said connector receptacle being characterized in that:

said conductors comprise single-piece stamped and formed members, said intermediate portions of said conductors being insert molded in, and being tightly and immovably embedded in, said housing,

a barrier bar extending across said opening at said rearward end of said housing, said barrier bar being integral at its ends with said opposed internal endwalls and being located substantially midway between said opposed internal sidewalls, said barrier bar having a plurality of slots therein which extend inwardly from the side edge of said barrier bar which is proximate to said one internal sidewall,

said contact springs having free ends which are adjacent to said rearward end of said housing, each of said free ends being received in, and captured by, one of said slots.

4,269,468

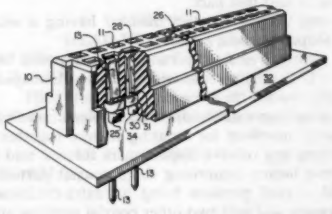
ELECTRICAL CONNECTOR INSULATOR

J. Preston Ammon; Harry R. Weaver, both of Dallas, and Claude Rodriquez, Carrollton, all of Tex., assignors to Elfab Corporation, Dallas, Tex.

Continuation of Ser. No. 835,051, Sep. 21, 1977, abandoned, which is a division of Ser. No. 770,578, Feb. 22, 1977, which is a continuation of Ser. No. 597,751, Jul. 21, 1975, abandoned. This application Sep. 11, 1979, Ser. No. 74,436

Int. Cl.³ H01R *13/50*

U.S. Cl. 339—176 M **8 Claims**



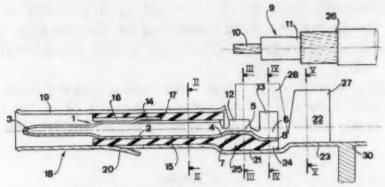
1. A removable insulator for an electrical connector having an upper and a lower surface, said insulator being adapted for housing a plurality of contacts having upper mating portions, applying an insertion force to said contacts to rigidly mount them into contact receiving apertures in a mounting substrate, and subsequent removal from the press fitted contacts, said insulator comprising:

a block of dielectric material having a plurality of sleeves formed therethrough extending between the upper and lower surfaces, each of said sleeves having a lower portion including an enlarged bottom opening for receiving a contact shoulder, frictionally retaining said contact shoulder lightly in engagement with the sidewalls of the lower portion of said sleeve, and permitting said contact to be withdrawn from said frictional retention force, each of said sleeves including a lower portion undercutting an upper portion, the upper portion of said sleeve being adapted for receiving the upper mating portion of the contact, and said undercut lower portion of said sleeve forming a transversely extending shoulder between the upper and lower portions of said sleeve for abuttingly engaging an intermediate upper shoulder portion of said contact for imparting thereto insertion forces for rigidly press fitting said contacts into the contact receiving apertures in the mounting substrate when a downward force is applied to the insulator, said insulator being removable from around said contacts when an upward force sufficient to overcome the collective contact shoulder/insulator frictional retention force is applied to the insulator.

4,269,469
CONTACT TERMINAL CONNECTOR

Bernard Audic, Clamart, France, assignor to Souriau & Cie, Boulogne-Billancourt, France

Filed Apr. 13, 1979, Ser. No. 29,647
Claims priority, application France, Apr. 21, 1978, 78 11820; Mar. 12, 1979, 79 06274
Int. Cl.³ H01R 17/06
U.S. Cl. 339—177 R 13 Claims



1. A contact terminal to form an electrical conection with a coaxial cable, said coaxial cable including a conducting core, a core insulating layer surrounding said conducting core, and a conducting shield surrounding said core insulating layer, said contact terminal comprising:

a first internal contact member including a first open U-shaped portion having a first part with a base shaped as an internal radial swelling and a second part with a base having a dimension different from the dimension of the base of said first part;

a second external contact member having a second open U-shaped portion;

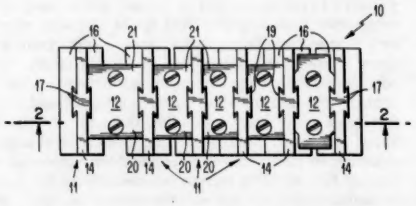
said second U-shaped portion being disposed behind said first U-shaped portion with said open U-shaped portions being toward the same side; and,

insulating sleeve means disposed between said first and said second members for securing thereof together and preventing any relative displacement thereof, said insulating sleeve means comprising three coaxial portions, one of said coaxial portions being an extra-thickness portion between said said two other coaxial portions and thicker than said two other coaxial portions and assuming substantially the exact shape of said internal radial swelling of said first internal contact member, said one of said coaxial portions coinciding with the base of said first part and one of the other of said two coaxial portions coinciding with the base of said second part.

4,269,470
MODULAR ELECTRICAL TERMINAL BOARD

Martin D. Ustin, 382 Central Park West, New York, N.Y. 10025

Filed Aug. 17, 1979, Ser. No. 67,296
Int. Cl.³ H01R 9/16
U.S. Cl. 339—198 H 7 Claims



1. An electrical terminal board comprising:

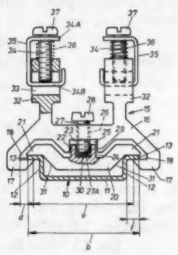
a plurality of modules made of an insulating material, each module comprising a base portion, a wall extending upwardly from one side of the base at substantially the mid-point thereof, said wall including dovetail protrusions extending outwardly on each side thereof, and,

a contact between each module having a dovetail slot on each side thereof to engage the dovetail protrusions on the opposite walls of adjacent modules thereby clamping and positioning said modules together.

4,269,471
ELECTRICAL TERMINAL FOR ATTACHMENT TO A CONTACT BAR

Hans Woertz, Basel, Switzerland, assignor to Oskar Woertz, Switzerland

Filed Aug. 24, 1979, Ser. No. 69,544
Claims priority, application Switzerland, Aug. 29, 1978, 9109/78
Int. Cl.³ H01R 9/24
U.S. Cl. 339—198 GA 8 Claims



1. An electric terminal for attachment to a contact bar of U-shaped cross-section having a web, a pair of spaced apart limbs and coplanar, spaced-apart, outwardly directed flanges at the ends of the limbs of the U-shaped bar, the said terminal comprising a retaining foot, claws on said retaining foot extending towards each other for gripping the two flanges of the contact bar, a respective recess defined between each claw and the retaining foot for accommodating one of the flanges of the contact bar, a terminal clamping body with two opposed end portions each of which engages in one of said recesses, the end portions bearing in use against the surfaces of the contact bar flanges remote from the web of the U-shaped contact bar; the said terminal clamping body being connected with the retaining foot by a locking screw to enable the terminal clamping body to be forced away from the retaining foot in order rigidly to clamp each of the two flanges of the contact bar between one of the claws and one of the end portions of the terminal clamping body, respectively; the clear spacing between the mutually facing ends of the claws and the depth of each said recess measured in the same direction being so selected in relation to the total width of the contact bar that when the locking screw is slackened the said terminal can be displaced in a direction transverse to the longitudinal direction of the contact bar until one of the claws is disengaged from the adjacent flange of the contact bar, whereby to enable the terminal to be mounted or demounted from the contact bar at any desired position along the contact bar, and the said terminal having two mutually opposed inclined surfaces adapted to co-operate with the contact bar to centre the said terminal relative to the cross-section of the contact bar.

4,269,472

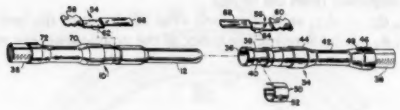
ELECTRICAL TERMINAL

Howard R. Shaffer, and Thomas H. Wycheck, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 26, 1979, Ser. No. 88,700

Int. Cl.³ H01R *4/20*

U.S. Cl. 339—223 R **10 Claims**



1. An improved stamped and formed electrical connector comprising:
   a barrel shaped contact portion;
   a crimp barrel portion; and
   a conically tapered continuous intermediary portion providing a smooth unbroken surface of transition between said crimp barrel portion and said contact barrel portion in a crimped condition.

4,269,473

IDENTIFICATION CARD WITH A HOLOGRAM AND A PROCESS FOR THE PRODUCTION THEREOF

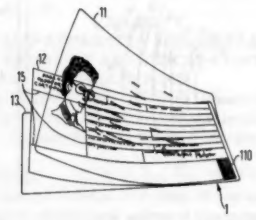
Detlev Flothmann, Munich; Hartwig Ruell, Fuerstenfeldbruck, and Angelika Staimer, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 5, 1979, Ser. No. 17,238

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1978, 2812841

Int. Cl.³ G03H *1/02, 1/04*

U.S. Cl. 350—3.61 **29 Claims**



1. An identification card provided with means for safeguarding against counterfeiting, said identification card including a substrate having a single layer of recording material uniformly provided thereon, visible information recorded on said single layer and a hologram recorded in a portion of the single layer, said hologram including information forming the means for safeguarding.

4,269,474

WIDE-ANGLE OPTICAL DOOR VIEWER

Yasushi Kamimura, 3-3, Chuou 2-chome, Outa-ku, Tokyo, Japan

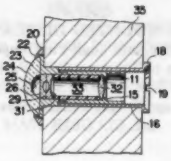
Filed Aug. 28, 1979, Ser. No. 70,489

Claims priority, application Japan, Jan. 31, 1979, 54-9080

Int. Cl.³ G02B *7/02*

U.S. Cl. 350—69 **1 Claim**

1. A wide angle lens assembly having an object side and a viewing side consisting of a first lens member having a convex surface on the object side thereof and a concave surface on the viewing side thereof; a second lens member having a planar surface on the object side thereof and a concave surface on the viewing side thereof arranged adjacent said first lens member on the viewing side thereof; a third lens member having a concave surface on both the object side and the viewing side thereof, with the concave surface on said viewing side having a diameter which is larger than the diameter of the concave surface on its object side, said third lens member being arranged adjacent said second lens member on the viewing side thereof; an eyepiece having a convex surface on both sides thereof spaced a predetermined distance from said third lens member on the viewing side thereof; a sleeve member arranged



to maintain said eyepiece and said third lens member operatively mounted within said assembly and spaced apart said predetermined distance; and means maintaining said lens assembly operatively joined together to enable a viewer on said viewing side thereof to see an object on said object side thereof, with the diameter of said concave surface on said viewing side of said third lens member being dimensioned to provide for said lens assembly a viewing angle of at least 190 degrees.

4,269,475

HEAD-UP DISPLAYS

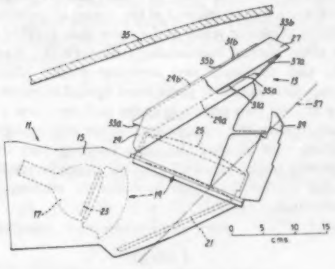
Stafford M. Ellis, East Preston, England, assignor to Elliott Brothers (London) Limited, Chelmsford, England

Filed Oct. 3, 1979, Ser. No. 81,455

Claims priority, application United Kingdom, Oct. 5, 1978, 39472/78

Int. Cl.³ G02B *27/14*

U.S. Cl. 350—174 **4 Claims**



1. A display head for an aircraft head-up display system comprising an optical projector and an image combiner through which an observer can view a distant scene and from which a collimated optical image developed by and projected from the optical projector is reflected to the observer wherein the combiner comprises a single body of light transmissive material inclined towards the observer's viewing position whose major external surface nearer said viewing position has a coating which covers an area extending from the transverse edge of said body further from said viewing position to a transverse boundary intermediate the transverse edges of said body nearer and further from said viewing position, and whose major external surface further from said viewing position has a coating covering an area extending from said transverse edge of said body nearer said viewing position to a transverse boundary intermediate said transverse edges; each of said coatings being effective to reflect light incident thereon from

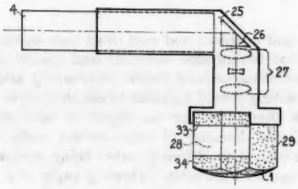
the optical projector and to transmit light incident thereon from the distant scene towards said viewing position; and said boundaries of the coatings being so disposed with respect to one another and with respect to the projector that the observer has an uninterrupted field of view of the image developed by said projector, the contribution to the field of view of each coating being contiguous with the contribution of the field of view of the other coating.

4,269,476

HELMET-MOUNTED DISPLAY SYSTEM

Francois H. Gauthier, and Jean-Paul Lepeytre, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Nov. 5, 1979, Ser. No. 90,921
Claims priority, application France, Nov. 7, 1978, 78 31439
Int. Cl.³ G02B 27/14
U.S. Cl. 350—174 **6 Claims**



1. A helmet-mounted display system comprising a structure rigidly fixed to the helmet and the following components mounted on said structure:

a unit for generating a luminous object to be displayed;

an image transfer device comprising lenses for forming an intermediate image of spherical shape;

a spherical mirror for projecting to infinity the intermediate image formed by said lenses on its focal surface;

a semi-transparent plane mirror having a negligible thickness and placed between the image transfer device and the spherical mirror in order to reflect said projected image to a viewer's eye positioned at the center of curvature of said spherical mirror while at the same time making it possible to view normal surroundings through the plane mirror, the said spherical and semi-transparent plane mirrors being constituted by juxtaposed optical elements comprising at least two prisms in order to form a one-piece collimating unit, the lateral faces of the said one-piece collimating unit as well as zones forming part of the face opposite to the viewer's eye and located outside the field being rendered opaque in order to eliminate parasitic radiations.

4,269,477

SYMMETRICAL OBJECTIVE

Masamichi Kitagawa, Tokyo, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1977, Ser. No. 860,441
Claims priority, application Japan, Dec. 22, 1976, 51-153342
Int. Cl.³ G02B 9/62
U.S. Cl. 350—464 **4 Claims**

1. A symmetrical objective comprising:

a front group consisting of a first positive meniscus lens, a second negative meniscus lens, a third positive meniscus singlet lens, each of said meniscus lenses being convex to the object and a back group of a fourth, fifth, and sixth lenses arranged in complete symmetrical form with respect to a diaphragm arranged behind the third lens characterized in that the following conditions of

$$0.31f \geqq l \geqq 0.20f \quad \text{I.}$$

$$0.20f > r_1 = -r_{12} > 0.12f \quad \text{II.}$$

$$0.17f > r_4 = -r_9 > 0.11f$$

-continued

$$-0.6f < \frac{n_2 - 1}{r_3} + \frac{1 - n_1}{r_2} + \frac{n_5 - 1}{-r_{10}} + \frac{1 - n_6}{-r_{11}} < -0.06f \quad \text{III.}$$

are fulfilled, where,

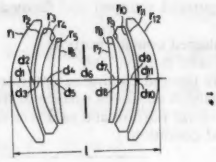
f: a composite focal length of whole objective

l: whole length of objective

$r_1, r_2 \ldots r_{12}$: radius of curvature of the lens counted in sequence from the object

$d_1, d_2 \ldots d_{11}$: axial space and axial thickness of the lens

$n_1, n_2 \ldots n_6$: a refractive index of the component lens with respect to line d.

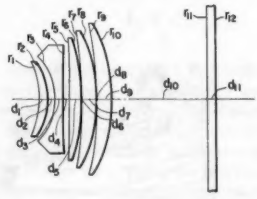


4,269,478

CONSTANT-SPEED SCANNING LENS SYSTEM

Haruo Maeda, Hino, and Yuko Kobayashi, Hachiouji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 11, 1979, Ser. No. 83,656
Claims priority, application Japan, Oct. 16, 1978, 53-127185
Int. Cl.³ G02B 9/60
U.S. Cl. 350—465 **10 Claims**



1. A constant-speed scanning lens system comprising a first, second, third, fourth and fifth lens components, said first lens component being a positive meniscus lens arranged concave toward the incident side, said second lens component being a negative lens, said third lens component being a positive meniscus lens arranged concave toward the incident side, said fourth lens component being a positive meniscus lens arranged concave toward the incident side, said fifth lens component being a positive meniscus lens arranged concave toward the incident side, said constant-speed scanning lens system satisfying the following conditions:

(1) $1.02 < |r_2/r_3| < 1.12$

(2) $0.013f < d_4 < 0.016f$

(3) $-0.245f < r_1 < -0.185f$

(4) $-6.8f < r_5 < -1.7f$

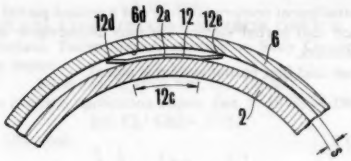
wherein reference symbols r_1, r_2, r_3 and r_5 respectively represent radii of curvature of respective surfaces of the first lens component, surface on the incident side of the second lens component and surface on the incident side of the third lens component, reference symbol d_4 represents the airspace between the second and third lens components, and reference symbol f represents the focal length of the lens systems as a whole.

4,269,479

MOUNTING SYSTEM FOR OPTICAL LENS ASSEMBLY

Masahide Hamatani, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 22, 1979, Ser. No. 5,465
Claims priority, application Japan, Feb. 2, 1978, 53-11728[U]
Int. Cl.³ G02B 7/04
U.S. Cl. 350—255 6 Claims



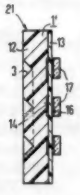
1. In a mounting mechanism for an optical system of lenses including inner lens barrel means and outer lens barrel means coupled together for relative movement therebetween in longitudinal directions thereof, the improvement comprising lubricating means interposed between said inner and outer lens barrel means, said lubricating means being fixed to either the external surface of said inner barrel means or the internal surface of said outer barrel means and being mounted to prevent at least axial movement thereof relative to the barrel means upon which it is mounted, said lubricating means being constructed in the form of at least one longitudinal strip inserted between said inner lens barrel means and said outer lens barrel means, said strip having a slide contact portion to effect sliding contact with said external surface of said inner lens barrel means or said internal surface of said outer lens barrel means, said strip having side edges thereof which are deformed to extend from said slide contact portion to produce a bias force between said inner lens barrel means and said outer lens barrel means, said lubricating means thereby operating to provide suitable lubrication for said mounting mechanism.

4,269,480

PROCESS AND APPARATUS FOR DISPLAYING AN IMAGE IN FRONT OF AN OPTICAL CONTRASTING BACKGROUND

Hans Krueger, Munich; Alois Schauer, Gruenwald, and Karl-Heinz Walter, Grafing, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 17, 1978, Ser. No. 961,730
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1977, 2753203
Int. Cl.³ G02F 1/01
U.S. Cl. 350—355 9 Claims



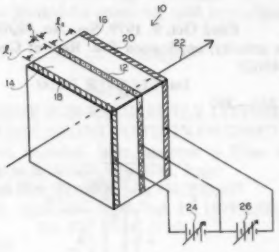
1. A display installation for displaying an image in front of an optical contrasting background comprising plate means for fluorescently absorbing ambient light and emitting fluorescent light in a selected location through exit windows disposed in the plate means, said plate means including means for emitting fluorescent light from the exit windows at an emission frequency range; light valves associated with each of the exit windows for blocking passage of light therefrom, said light valves including filter means for absorbing light in a constant absorption frequency range; said plate means having its frequency range being adjusted in response to an application of electrical field thereto; and means for applying an electrical field to selected areas of said plate means so the selected area is selectively switched between a light transmitting and a light blocking state.

4,269,481

MULTIPLE-CAVITY ELECTRO-OPTIC TUNABLE FILTER

Pochi A. Yeh, and John M. Tracy, both of Thousand Oaks, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 6, 1979, Ser. No. 55,248
Int. Cl.³ G02F 1/03
U.S. Cl. 350—356 19 Claims



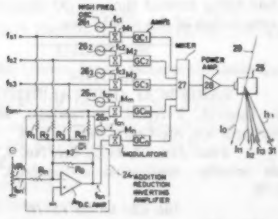
1. A multiple cavity electro-optic tunable filter, comprising:
an ordered row of n electro-optically tunable plates (n=2, 3, 4, . . .), each plate including an incident surface and an emergent surface;
an incident reflective coating on the incident surface of the first tunable plate in said row;
an emergent reflective coating on the emergent surface of the nth tunable plate in said row; and
a series of (n−1) absorbent metallic films, one of said films being disposed between each pair of adjacent plates in said row in mating contact with the adjacent surfaces of said adjacent plates.

4,269,482

SIMULTANEOUS MULTI-BEAM OPTICAL MODULATION SYSTEM

Masaaki Mori, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Oct. 25, 1978, Ser. No. 954,533
Claims priority, application Japan, Oct. 25, 1977, 52-127857
Int. Cl.³ H04B 9/00
U.S. Cl. 350—358 1 Claim



1. In a simultaneous multi-beam optical modulation process comprising the steps of obtaining a plurality of modulated signals with the amplitude of carriers having different frequencies modulated by a plurality of signals, and driving an acoustic

optical element by said modulated signals, whereby a light modulation is performed by said acoustic optical element, the improvement comprising the steps of producing a dummy signal by adding and then inverting a plurality of said signals and a setting voltage for setting an overall deflection efficiency of said acoustic optical element, the polarity of said setting voltage being opposite to that of said signals, modulating the amplitude of an assigned carrier by said dummy signal and obtaining a modulated output, summing up said modulated output and said modulated signals into a summed up signal through a gain control means, and applying said summed up signal to said acoustic optical element.

4,269,483

ELECTRO-OPTICAL VOLTAGE MEASUREMENT DEVICE

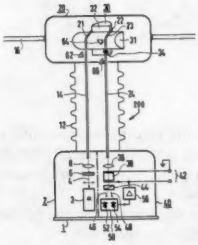
Ernst Feldtkeller, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 9, 1979, Ser. No. 82,695

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1978, 2845625

Int. Cl.³ G01R *31/00*

U.S. Cl. 350—390 **19 Claims**



1. In a device for electro-optically measuring a voltage in a high voltage conductor, which voltage produces an electrical field that will elliptically polarize both a linearly polarized light beam and a circularly polarized light beam, said device having a transmitter providing a source of a light as a light beam, means polarizing the light beam, a head section at the high voltage conductor, and a receiver on a base which is spaced from the head section, said receiver having a means for measuring the voltage due to a phase difference between the components of the light beams passing with different transit speeds the improvements comprising the transmitter being on the base, a supply line extending from the source to the head and a return line for conducting the light beam having a desired polarization, which is either linear or circular, between the head section and the base, said supply line and said return lines each being formed by a separate crystal fiber having a longitudinal, linear electro-optical effect and becoming birefringent in an electrical field, and the crystal orientation of the return line being rotated through 90 degrees relative to the crystal orientation of the supply line.

4,269,484

VARIFOCAL OPTICAL SYSTEM

Francois Laurent, Yverdon, Switzerland, assignor to Bolex International SA, Ste-Croix, Switzerland

Filed Jan. 23, 1979, Ser. No. 5,737

Claims priority, application Switzerland, Jan. 27, 1978, 922786/78

Int. Cl.³ G02B *15/16*

U.S. Cl. 350—427 **8 Claims**

1. An optical system for extremely high focal length variation, comprising an attachment of variable magnification and a base objective of fixed focal length, whereby the attachment has at least four lens members which are displaceable along the optical axis with the focal length change, comprising (viewed in the incoming direction of the light)

first and fourth displaceable lens members,

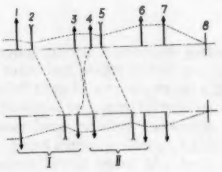
second and third lens members,

means for displacing said first and fourth displaceable lens members according to the same movement law,

means for displacing said second and third lens members according to movement laws which are different from each other,

the attachment comprises a first and a second partial system, each said partial system has two displaceable said lens members,

at least said first partial system is afocal,



a base objective,

said first partial system in the attachment comprises,

a stationary first member, a means comprising a second member displaceable for the focal length variation,

means constituting a third member for bringing about an image position compensation,

said second partial system comprises a fourth member following said third member,

a moveable fifth lens member, said fourth member constitutes means for compensating wandering of the image which is produced by movement of said fifth lens member,

said second partial system includes an additional stationary member adjacent said base objective.

4,269,485

METHOD FOR FOCUSING AN OBJECTIVE LENS OF ENDOSCOPE

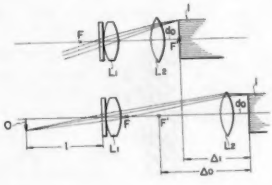
Nobuo Yamashita, Tama, and Miwako Maeda, Hino, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 29, 1978, Ser. No. 974,501

Claims priority, application Japan, Jan. 9, 1978, 53-536

Int. Cl.³ A61B *1/00*; G02B *3/00, 5/17, 9/34*

U.S. Cl. 350—469 **2 Claims**



1. An objective optical system for endoscopes comprising an objective lens system consisting of a front lens group and a rear lens group, and an optical fiber bundle, said front lens group being fixed to the body of the endoscope, whereas said rear lens group and said optical fiber bundle being movable along the optical axis while keeping the relative interval therebetween at a constant distance, said objective optical system satisfying the following conditions:

$$f < f_1 < \sqrt{2}\, f$$

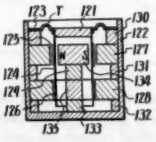
wherein the reference symbol f_1 represents focal length of said front lens group and the reference symbol f designates focal length of said objective lens system as a whole.

4,269,486

MULTI-AXIS MOVABLE MIRROR DEVICE

Kenji Shintani, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 2, 1980, Ser. No. 109,072
Claims priority, application Japan, Jan. 9, 1979, 54-1962
Int. Cl.³ G02B *27/17*
U.S. Cl. 350—486 **5 Claims**



1. A mirror device movable about multiaxes comprising
a housing,
a mirror member,
flexible connection means for flexibly supporting said mirror within said housing with its reflective side facing outwardly of said housing and wherein said mirror is universally pivotable about a plurality of axes,
said flexible connection means comprising an annular sheet of flexible material bonded to the outer periphery of said mirror and to an interior surface section of said housing,
said flexible connection means further including an annular corrugated segment therein disposed between said mirror and said housing to provide a platform for said mirror allowing for universal tilting movement of said mirror with a high degree of sensitivity and frequency response,
a bobbin operatively associated with said mirror and disposed within said housing,
a first coil member wound on said bobbin within said housing adapted to be supplied with a first control current,
a second coil member wound on said bobbin within said housing spaced from said first coil member and wound separately from said first coil member adapted to be supplied with a second control current,
first and second magnetic circuit means fixed in said housing adjacent said first and second coil members, respectively, whereby current flow in either of said first or second coil members reacts with said respective magnetic circuit means to induce a force tending to pivot said bobbin and mirror member.

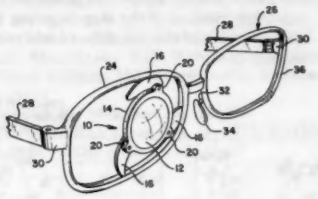
4,269,487

SPECTACLE LENS INSERT FOR APHAKIC REFRACTION

John M. Young, Southbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Apr. 11, 1980, Ser. No. 139,369
Int. Cl.³ G02C *11/02*
U.S. Cl. 351—58 **4 Claims**

1. A lens insert for patient over-refraction with spectacles frames having internally grooved lens receiving rims comprising:
an ophthalmic lens of smaller diametral dimension than a rim of a spectacles frame to be used for over-refraction;
a ring within which said lens is fitted;
a plurality of supporting legs each having one end pivotally connected to said ring and extending away therefrom in a plane generally parallel to the plane of said ring, an edge of each of said legs being beveled for engagement in a selected one of said internal grooves of said rims of said spectacles frame; and



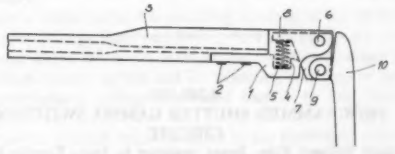
means for resiliently biasing each of said legs away from said ring for seating said beveled edges in said groove of said selected rim while permitting lateral adjustment of said lens insert as needed for centering with one of a patient's visual axes.

4,269,488

FLEXIBLE HINGE FOR RESILIENTLY CONNECTING THE ARMS TO THE FRONT PORTION OF SPECTACLES

Alberto Zancaner, Segusino, Italy, assignor to Filos S.a.s. Di Zancaner Alberto & Sorella, Segusino, Italy

Filed Jan. 10, 1980, Ser. No. 110,807
Claims priority, application Italy, Jan. 17, 1979, 20519/79[U]
Int. Cl.³ G02C *5/16*
U.S. Cl. 351—113 **1 Claim**



1. A flexible hinge for resiliently mounting each of the arms to the front portion of a spectacle frame, which consists of a shaped wing, means for connecting said wing to said arms, said wing having a housing, a pressure cylindrical spring being located in said housing, a lever arm pivotally connected to the end of said wing by first pivot means, said lever arm being provided with a lug engageable with said spring, second pivot means for pivotally connecting said lever arm to the front portion of said spectacle frame, the side end of said front portion being capable of pressing against the arm edge, said arms spreading apart upon application of a slight outwardly directed pressure.

4,269,489

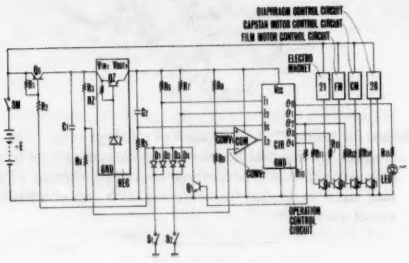
CAMERA AND ERROR PREVENTING CIRCUIT THEREFOR

Hiroyuki Takimoto, Urawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 5, 1979, Ser. No. 72,665
Claims priority, application Japan, Sep. 8, 1978, 53-111061
Int. Cl.³ G03B *1/00, 17/38*
U.S. Cl. 352—174 **5 Claims**

1. A camera, comprising:
(a) release actuating means,
(b) a plurality of camera elements,
(c) a sequencing circuit connected to said camera elements for performing a photo-taking start sequence to actuate said camera elements with a prescribed timing to initiate a photo-taking operation, and a photo-taking stop sequence

to place the camera elements in an inactive state with a prescribed timing to terminate a photo-taking operation, said sequencing circuit being arranged to carry out the start sequence in response to operation of said release actuating means and the stop sequence in response to discontinuing of the operation of said release actuating means,



(d) a detecting circuit for detecting a battery voltage and for producing a detection signal when said voltage drops below a prescribed level, and

(e) a distinguishing and control circuit for causing said sequencing circuit to carry out said stop sequence when the detection signal is produced while the release actuating means are operated, and for prohibiting the actuation of said start sequence when the detection signal is produced before the release actuating means is operated.

4,269,490

PROGRAMMED SHUTTER GAMMA SWITCHING CIRCUIT

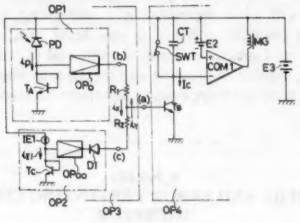
Satoshi Takami, Eiza, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 16, 1979, Ser. No. 12,693

Claims priority, application Japan, Mar. 16, 1978, 53-30186

Int. Cl.³ G03B *7/083*

U.S. Cl. 354—24 **10 Claims**



1. A gamma switching circuit of a programmed shutter comprising: means for generating an optical current varying with respect to brightness of light; a voltage conversion circuit for logarithmic compression of said optical current; a constant voltage circuit in which only inflow current is available and no outflow current is available at the output terminal thereof; and a time setting circuit including a switching circuit and a shutter controlling magnet driving circuit, the output terminal of said voltage conversion circuit being connected at a connection point to the output terminal of said constant voltage circuit, and the connection point being connected to the input terminal of said time setting circuit.

4,269,491

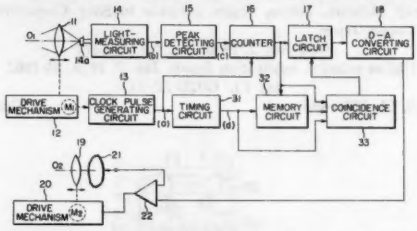
DISTANCE INFORMATION JUDGING CIRCUIT FOR FOCUS DETECTING APPARATUS

Nobuyoshi Hagyuda, Kawasaki, and Hiroaki Tanaka, Tokyo, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Sep. 18, 1979, Ser. No. 76,551

Int. Cl.³ G03B *3/10*

U.S. Cl. 354—25 **8 Claims**



1. A distance information judging circuit responsive to the distance information signals produced by a focus detecting apparatus in an optical system for providing a distance information signal corresponding to the focused position of the optical system, comprising:

means for scanning the optical system between an infinite focal position and a minimum focal position;

memory means for storing a first distance information signal obtained from said focus detecting apparatus during a first scan of said optical system; and

coincidence signal generating means for comparing a second distance information signal obtained from said focus detecting apparatus during a succeeding scan of said optical system with the first distance information signal stored in said memory means and for generating a coincidence signal when said distance information signals coincide with each other.

4,269,492

PHOTOGRAPHIC CAMERA WITH SINGLE SELECTOR STRUCTURE PERFORMING EXPOSURE-PARAMETER ADJUSTMENT AND ALSO SWITCHING OF CONTROL AND MONITORING CIRCUITS

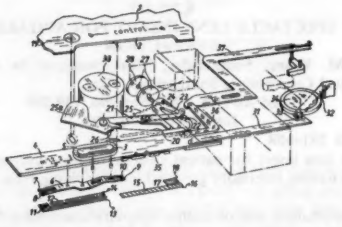
Dieter Engelsmann, Unterhaching, and Rolf Schröder, Baldham, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Mar. 14, 1979, Ser. No. 20,329

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1978, 2841648

Int. Cl.³ G03B *1/18, 17/38*

U.S. Cl. 354—42 **12 Claims**



1. In a photographic camera of the type provided with a film-transport system including an electric film-transport motor, in combination, means for adjusting an exposure parameter of the camera, including a manually displaced multi-setting

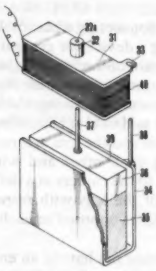
exposure-parameter selector member manually displaced by the user for adjusting the value of at least one camera exposure parameter and having an inoperative setting and a series of operative settings, and motor-control circuit means including at least a first and a second electrical switch connected in the circuit path of the film-transport motor such that both must be closed to effect motor energization, and means responding to displacement of the selector member from its inoperative to any of its operative positions by closing the first electrical switch without closing the second electrical switch.

4,269,493

ELECTROMAGNETIC CAMERA SHUTTER CONTROL DEVICE

Ryoichi Suzuki, Kawasaki; Takao Kinoshita, Tokyo; Yukio Ogawa, Kawasaki, and Takashi Uchiyama, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 22, 1979, Ser. No. 14,621
Claims priority, application Japan, Feb. 23, 1978, 53/20117
Int. Cl.[3] G03B *9/00;* **H02K** *33/02, 41/02;* **H01F** *7/16*
U.S. Cl. 354—51 **9 Claims**



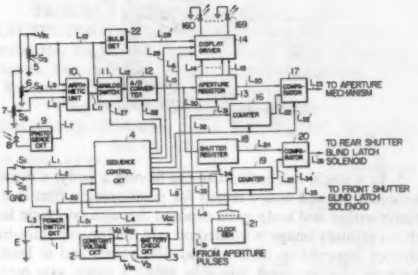
1. An electromagnetic control device including:
- a hollow yoke having a rectangular configuration defining an internal space;
- a permanent magnet fixedly mounted in said internal space of said yoke;
- a pole piece fixedly mounted on said permanent magnet;
- an air gap defined between an internal surface of said yoke and said pole piece within which a magnetic flux is produced by said permanent magnet;
- a first guide member mounted on said pole piece;
- a second guide member mounted on said yoke;
- a hollow bobbin having a rectangular configuration and having first and second guide receivers thereon, said first and second guide receivers operating to receive in engagement therewith said first and said second guide members, respectively, to effect guided movement of said bobbin within said air gap; and
- a coil surrounding said bobbin, energization of said coil operating through interaction with said magnetic flux in said air gap to effect guided movement of said bobbin by interengagement between said first and said second guide members with said first and said second guide receivers, respectively.

4,269,494

BATTERY LEVEL WARNING DEVICE

Kazuo Shiozawa, 6-46-5, Tamadaira, Hino-shi, Tokyo; Michio Yagi, 1526-42 Yamada-cho, Hachioji-shi, Tokyo; Kijiro Suzuki, 2-1-5 Shinmeidai, Hamura-cho, Nishitama-gun, Tokyo; Kazuhisa Aratame, 2-5-10 Ohowada-cho, Hachioji-shi, Tokyo; Ryushi Shimokawa, 1-30 Nishifu-cho, Fuchu-shi, Tokyo, and Haruji Ishihara, 1503 Josuihon-cho, Kodaira-shi, Tokyo, all of Japan

Filed Jul. 12, 1978, Ser. No. 924,010
Claims priority, application Japan, Jul. 18, 1977, 52/85038
Int. Cl.[3] G03B *7/26, 17/18, 17/38*
U.S. Cl. 354—60 L **12 Claims**


TO APERTURE MECHANISM
TO REAR SHUTTER BLIND LATCH SOLENOID
TO FRONT SHUTTER BLIND LATCH SOLENOID
FROM APERTURE PULSES

1. An electronic system for driving display means and a load means comprising:
- a battery;
- a battery check circuit for detecting the drop of the power-supply voltage from said battery to a comparatively low value above the lower limit of the operation voltage of said electronic system and for detecting the drop of said power-supply voltage from said battery to said lower limit;
- a sequence control circuit coupled to the electronic system and controlled by a first and a second switch and by the output of said battery check circuit; and
- a power switching means connected between said battery and said battery check circuit,

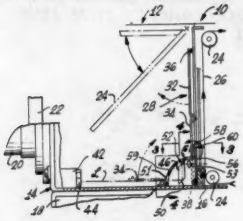
wherein said first switch is set to the ON condition so as to start a first operation of said electronic system, wherein said second switch is thereafter set to the ON condition so as to start a second operation of said electronic system, wherein said power switching means is set to the ON condition by the ON condition of said first switch so that said battery check circuit is supplied with said power-supply voltage from said battery and said battery check circuit starts to detect said power-supply voltage, wherein said display means is controlled by said battery check circuit and said sequence control circuit to indicate internal information of said electronic system and battery-level warning information during said first operation of said electronic system based on the ON condition of said first switch when said power-supply voltage through said power switching means is lower than said comparatively low value, wherein said internal information is inherently derived by the function of said electronic system when the power supply voltage is higher than said lower limit, wherein said load means is driven by said electronic system in said second operation of said electronic system based upon the ON condition of said second switch when said power-supply voltage is higher than said lower limit, and wherein said battery check circuit prohibits said sequence control circuit from starting the second operation of said electronic system when said power-supply voltage from said power switching means is lower than said lower limit.

4,269,495

CAMERA WITH BACK-UP SHUTTER AND PROVISIONS FOR RECORDING DATA IN CONJUNCTION WITH A PRIMARY IMAGE

Le Roy M. Dearing, Studio City, Calif., assignor to L. M. Dearing Associates, Studio City, Calif.

Filed Oct. 31, 1979, Ser. No. 90,041
Int. Cl.³ G03B *17/24*
U.S. Cl. 354—106 **12 Claims**



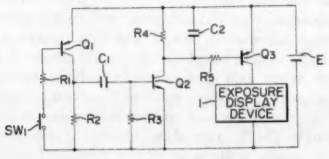
1. In a single lens reflex camera having a body, a main lens mounted on said body, means for positioning a film in a film plane within said body to be exposed through said main lens so that a primary image is formed on said film an exposure-timing shutter disposed in front of said film plane, and at least one back-up shutter panel movable about a pivot axis beteen a closed position covering said film plane and an open postion exposing said film plane, the improvement comprising: data image recording means mounted within said body between said lens and said film plane for providing an illuminated data image to be recorded on said film in conjunction with said primary image, a light-blocking frame extending around an area of said film plane on which said data image is to be recorded, said shutter panel defining a cutaway area shaped and dimensioned to permit at least a portion of said data image recording means to pass therethrough as said shutter panel moves between said open and closed positions, said shutter panel also having an edge portion extending along said cutaway area and arranged to engage said frame in a light-tight manner when said shutter panel is in said closed position.

4,269,496

POWER SUPPLY CIRCUIT FOR CAMERA

Ryuzo Motoori, Kawaskai; Sakuji Watanabe, Warabi, and Yoshiaki Ohtsubo, Kawasaki, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed May 30, 1979, Ser. No. 43,647
Claims priority, application Japan, May 31, 1978, 53-64372
Int. Cl.³ G03B *17/40*
U.S. Cl. 354—267 **5 Claims**



1. In a power supply circuit for use in a photographic camera and provided with a power switch for connecting a load such as an exposure display device to a power source, the improvement comprising:

a differentiating circuit for differentiating a switch closing signal generated when said power switch is closed;

a timer circuit responsive to the output of said differentiating circuit for initiating a timing operation upon the closing of said power switch, said timing operation terminating after the lapse of a predetermined period which is independent of the length of time said power switch is closed; and

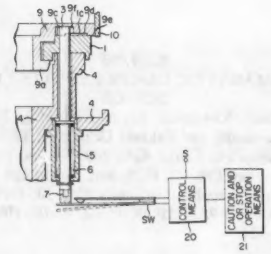
means responsive to the output of said timer circuit for connecting said load to the power source only during said timing operation.

4,269,497

LENS BARREL FOR BOTH PRIORITIES OR SHUTTER SPEED PRIORITY MODE AUTOMATIC EXPOSURE SYSTEM

Sunao Ishizaka; Yoshitaka Araki, both of Tokyo, and Takeshi Muryoi, Chigasaki, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Sep. 7, 1979, Ser. No. 73,423
Claims priority, application Japan, Sep. 13, 1978, 53-124799
Int. Cl.³ G03B *17/00*
U.S. Cl. 354—286 **6 Claims**



1. A device for connecting a phototaking lens with a camera, the camera having a device for generating an output by which a diaphragm aperture of the lens is adjusted to a value obtained from a preset shutter speed and an object brightness, and the lens having a device for driving the diaphragm aperture in coordination with said output generating device in the camera, wherein the camera and the lens are, respectively, formed with surfaces engaging each other and wherein the lens is completely connected to the camera at a defined final position upon relative rotation of the lens with respect to the camera with said engaging surfaces opposed to each other, the device comprising:

(a) a discriminating pin having an end retractably projected from the engaging surface of the camera;

(b) means for biasing the pin so that the pin may be projected;

(c) switching means for generating in response to the retraction of the pin a signal which indicates that no incoordination between the camera and the lens is possible; and

(d) a recess means for impeding the retraction of the pin, the recess means being formed to be opposed to said pin at least at said defined final position of the engaging surface of the phototaking lens, the recess means being of a size into which said end can be inserted.

4,269,498

ACCESSORY DEVICE FOR PHOTOGRAPHIC CAMERA

Yoshiki Suzuki, Tokyo, and Seijiro Noda, Yokohama, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Apr. 12, 1979, Ser. No. 29,463
Claims priority, application Japan, Apr. 14, 1978, 53-49210[U]
Int. Cl.³ G03B *17/02*
U.S. Cl. 354—288 **3 Claims**

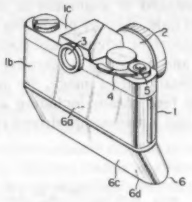
1. An accessory device for use with a photographic camera, said camera comprising:

(a) a photo-taking lens;

(b) a camera body having a portion for mounting said photo-

taking lens, a front surface formed substantially perpendicular to the optical axis of said photo-taking lens and a rear surface formed substantially parallel to said front surface, the distance between the front surface and the rear surface being less than the height of the camera body;

said front and rear surfaces extending laterally from said lens mounting portion to constitute gripper portions for holding the camera at the time of the photographic operation, said camera body further having an operating portion provided at the upper portion of at least one of said gripping portions and a viewfinder eyepiece provided in said rear wall surface;



said accessory device having a rear wall surface contiguous to and substantially the same lateral length as that of said rear surface, and a front wall surface substantially parallel to said rear wall surface, said rear wall surface being inclined forwardly and downwardly of said camera body with respect to said rear surface, said accessory device further having a bottom wall surface formed substantially parallel to said optical axis.

4,269,499

TWO-PIECE QUADRIPOD FOR CAMERAS

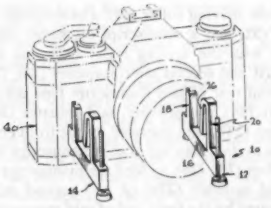
Robert S. Frankel, 11905 Woodbridge St., #10, Studio City, Calif. 91604

Filed Dec. 26, 1979, Ser. No. 106,405

The portion of the term of this patent subsequent to Mar. 11, 1997, has been disclaimed.

Int. Cl.[3] G03B *17/00*

U.S. Cl. 354—293 **5 Claims**



1. A camera quadripod comprising:

a pair of substantially identical bipods, each of said bipods having first and second spaced arms one of said arms being resilient and longer than the other of said arms;

a crossbar interconnecting said arms so that a camera body can be engaged on said crossbar and resiliently detachably embraced within said arms for support of the camera body;

said resilient arm including an upwardly directed portion extending upwardly from said crossbar and having an upper end, a connecting bar portion extending from said upper end toward said other arm, and a slanted portion extending downwardly from said connecting bar portion toward said other arm; and

each of said bipods having first and second spaced support legs, at least one of said legs on each of said bipods being adjustable for supporting said quadripod in a selected position and for supporting a camera engaged within the arms of and supported by said quadripod in a selected position.

4,269,500

TROUBLE DETECTING SYSTEM FOR ELECTROPHOTOGRAPHIC COPYING MACHINE

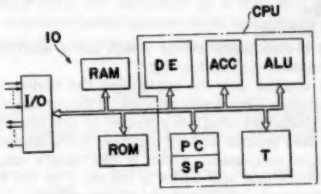
Masazumi Ito, Toyokawa; Kenji Shibazaki, Aichi, and Tsuneo Kitagawa, Toyohashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 7, 1979, Ser. No. 101,250

Claims priority, application Japan, Dec. 29, 1978, 53-164356

Int. Cl.[3] G03G *15/00*

U.S. Cl. 355—14 C **5 Claims**



1. In an electrophotographic copying apparatus having a support for placing an original, illumination means for projecting light beam onto the original, optical transmitting means for transmitting an image of the original onto a photoreceptor surface, scanning means for scanning the original by the illumination means, and means for driving the scanning means, a trouble detecting system comprising:

pulse generating means for generating pulse signal in response to the actuation of the driving means;

means for generating a starting signal for starting actuation of the scanning means;

first detecting means for detecting the action of the scanning means and for producing a first detect signal when said scanning means is actuated a predetermined degree from its initial condition;

second detecting means for detecting the generation of the pulse signal from the pulse generating means and for producing a second detect signal in response to a level change in the pulse signal;

first timer means for counting a first predetermined period of time in response to the starting signal, said first predetermined period of time being longer than a period of time necessary for the scanning means to act from its initial condition to said predetermined degree;

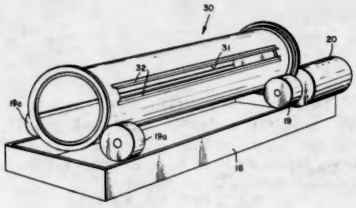
second timer means for counting a second predetermined period of time in response to said starting signal, said second predetermined period of time being longer than a pulse duration of said pulse signal; and

means responsive to the breakdown of the scanning means for generating a first warning signal when the first detecting means produces no first detect signal within said first predetermined period of time and a second warning signal when said second detecting means produces no second detect signal within said second predetermined period of time.

4,269,501
DRUM FOR AN AUTOMATIC PHOTOGRAPHIC PROCESSING SYSTEM

Glen A. Griffith, 1809 Armour La., Apt. No. 2, Redondo Beach, Calif. 90278, and Leroy V. Sutter, Jr., 6301 Summertime La., Culver City, Calif. 90230

Filed Sep. 12, 1979, Ser. No. 74,863
Int. Cl.³ G03D *3/04*
U.S. Cl. 354—323 **2 Claims**



1. An improved drum mechanism for use in combination with an automatic photographic processing system which includes:

a. a housing;

b. a bi-directional motor which has a shaft and which is mounted on the housing;

c. a control unit for controlling the bi-directional motor which is electrically coupled to the bi-directional motor;

d. a drain tray which is mounted on the housing; and

e. a fluid injector unit for injecting fluids into said improved drum mechanism which is electrically coupled to the control unit and which is mounted on the housing, said improved drum mechanism comprising:

a. an elongated, cylinder-shaped member which is adapted to receive photographic print materials and which is fluidly coupled to the fluid injector unit, said elongated, cylinder-shaped member having a a slot which travels longitudinally along its sidewall so that it forms a drain for draining the fluid from said elongated, cylinder-shaped member;

b. a pair of lips which are disposed parallel and adjacent to said slot so that the fluid will not splash out of said elongated, cylinder-shaped member thereby contaminating the fluids;

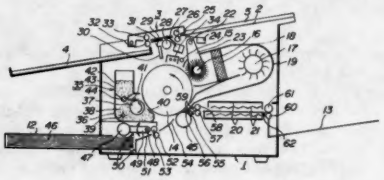
c. a drum mounting including a set of four rollers, one of which is mechanically coupled to the shaft of the bi-directional motor, which is mechanically coupled to the housing adjacent to the drain tray so that when said elongated, cylinder-shaped member is placed on said set of four rollers it can be bi-directionally rotated by the bi-directional motor.

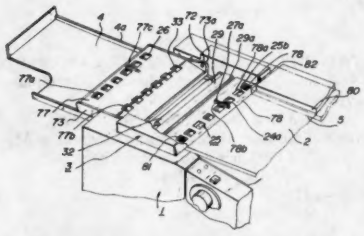
4,269,502
ELECTROPHOTOGRAPHIC COPYING APPARATUS FOR COPYING MANUSCRIPTS WITHOUT INTERRUPTIONS

Hiroshi Tsuda, Mitaka; Kiyoshi Miyashita; Masaji Nishikawa, both of Hachioji; Akira Shimizu, Fuchu, and Muneo Kasuga, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 3, 1979, Ser. No. 26,760
Claims priority, application Japan, Apr. 18, 1978, 53-46183
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—35 H **7 Claims**

1. An improved electrophotographic copying apparatus comprising a substantially rectilinear manuscript feed path including a slit light exposure portion, a manuscript feed path defined by upper and lower side manuscript guide members arranged above and below said manuscript feed path at said slit light exposure portion with said manuscript feed path interposed therebetween, said upper side guide member being arranged movably with respect to said slit light exposure portion, and a photosensitive body for memorizing said manuscript image projected through said slit light exposure portion thereon as an electrostatic latent image, said sheet manuscript is fed along said manuscript feed path interposed between said upper and lower side manuscript guide members and scanned by exposed light for producing copies of said sheet manuscript, and when obtaining copies of a thick manuscript said thick manuscript is fed along said lower side manuscript guide member and said upper side manuscript guide member, said guide members being arranged in alignment as said manuscript is scanned by exposed light, thereby producing on said photosensitive body, an electrostatic latent image corresponding to said manuscript image and obtaining a plurality of copies on the basis of said electrostatic latent image, the improvement comprising: manuscript feed means including a manuscript feed driving roller **(25)** and a manuscript driven roller **(26)** engage-





able with the driving roller **(25)**, a manuscript discharge driving roller **(32)** and a manuscript discharge driven roller **(33)** engagable with the driving roller **(32)**, and actuators **(24*a*)**, **(27*a*)** of first and second microswitches **(24)**, **(27)** arranged in the front and rear of said manuscript feed driving and driven rollers **(25)**, **(26)**, respectively, said actuator **(24*a*)** of said first microswitch **(24)** being operated by the front end of said manuscript so as to start rotation of said manuscript feed driving and driven rollers **(25)**, **(26)**, to feed the manuscript seized therebetween; said actuator **(27*a*)** of said second microswitch **(27)** being operated by the front end of said manuscript so as to stop said manuscript feed driving and driven rollers **(25)**, **(26)** and stop the feed of the manuscript until a plurality of copies of a manuscript immediately before the stopped manuscript, have been obtained by means of the electrostatic latent image of the manuscript image projected on the photosensitive body and then said manuscript driving and driven rollers **(25)**, **(26)** being rotated again so as to feed the manuscript.

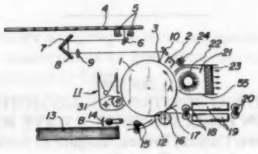
4,269,503
TONER CLEANING APPARATUS

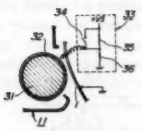
Masaji Nishikawa, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 5, 1979, Ser. No. 55,292
Claims priority, application Japan, Jul. 12, 1978, 53/84058
Int. Cl.³ G03G *21/00*
U.S. Cl. 355—15 **11 Claims**

1. A toner cleaning apparatus for use in an electrophoto-

graphic apparatus which comprises an electrostatic charge retentive drum rotatably arranged in a given direction, means for forming an electrostatic latent image corresponding to an image of a document to be duplicated, means for treating dry toners to develop the latent image with the dry toners to form a toner image on the drum, and means for transferring the toner image onto a record paper which is fed with being in contact with the drum, said latent image forming means, toner treating means and transferring means being arranged in this order viewed in the rotating direction of the drum, comprising a first exclusive cleaning device arranged between the transferring means and the latent image forming means viewed in said rotating direction of the drum and being driven into an operative position in which the first exclusive cleaning device is made in contact with the drum and into an inoperative position in which the first exclusive cleaning device is made apart from the drum; first control means for selectively driving said first exclusive cleaning device into either the operative position or the inoperative position; second control means for selectively operating said toner treating means as a developing device or a second cleaning device; and third control means for controlling said first and second control means in such a manner that when a power supply is applied to the electrophotographic apparatus, said toner treating means is made operative as the second cleaning device for at least one revolution of the drum to remove possible residual toners on the drum; that as long as the latent image has to be developed during a duplicating operation, said toner treating means is made operative as the developing device; when a print start signal for initiating the duplicating operation for a next document is not given within a time interval from a time when a front edge of the latent image on the drum passes through a position of the transferring means to a time when the front edge of the latent image arrives at a position of the first exclusive cleaning device, the toner treating means is made operative as the second cleaning device to remove residual toners on the drum during at least one additional revolution of the drum, while the first exclusive cleaning device is driven into said inoperative position; and when said print start signal is given within said time interval, said first exclusive cleaning device is driven into said operative position so as to initiate immediately a formation of a latent image of the next document.





4,269,504

PICKOFF DEVICE FOR COPYING MACHINE

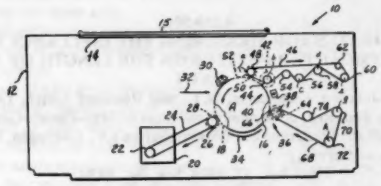
Benzion Landa, Edmonton, Canada, assignor to Savin Corporation, Valhalla, N.Y.

Continuation of Ser. No. 850,216, Nov. 9, 1977, abandoned. This application Jul. 25, 1979, Ser. No. 60,357

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 SH **23 Claims**

1. In a copying machine of the image transfer type in which an image developed on a surface is transferred to a sheet of copy material which moves with the surface through a transfer station to a pickoff station, pickoff apparatus including a first clutch element, means for driving said first clutch element, a second clutch element, means mounting said second clutch element for movement relative to said first clutch element with a narrow space between said elements, an opening leading into said narrow space, means positioning said clutch elements with said opening at a location adjacent to said surface, means for directing a portion of a copy sheet from said moving surface into the space between said elements, the relationship between the thickness of said sheet and the space between said elements being such that entry of said sheet into said space clutches said elements to each other for movement as a unit, and means responsive to a predetermined movement of said elements as a unit for releasing said portion of a copy sheet.



4,269,505

DEVICE FOR THE PROJECTION PRINTING OF THE MASKS OF A MASK SET ONTO A SEMICONDUCTOR SUBSTRATE

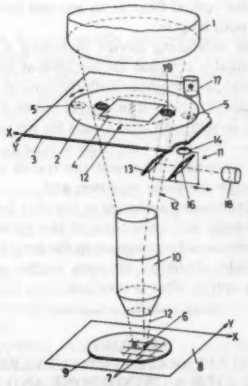
Herbert E. Mayer, Eschen, Austria, assignor to Censor Patent- und Versuchs-Anstalt, Vaduz, Liechtenstein

Filed Oct. 10, 1979, Ser. No. 83,532

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1978, 2845603

Int. Cl.³ G03B *27/52*

U.S. Cl. 355—62 **14 Claims**



1. A device for the projection printing of the masks of a mask set onto a workpiece, particularly onto a semiconductor substrate for the manufacture of integrated circuits, said device comprising a projection lens for the imaging of the patterns of said masks on photosensitive layers of said workpiece in successive processing cycles, alignment patterns being disposed on said masks and alignment targets being disposed on said work piece, said alignment patterns of said masks being aligned with said alignment targets of said workpiece before imaging the respective mask pattern on said workpiece, wherein said alignment patterns of at least one of said masks and said align-

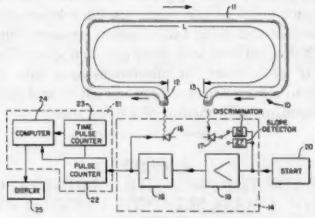
ment targets of said work piece are positioned in non-conjugated areas in respect of the projection lens, i.e. in areas which cannot be imaged into one another by means of said projection lens, and wherein auxiliary optical means are provided for the alignment process, said alignment targets of said workpiece and said alignment patterns of said mask being imaged into one another by means of said auxiliary optical means.

4,269,506

APPARATUS FOR MEASURING THE INFLUENCE OF PHYSICAL PARAMETERS ON THE LENGTH OF A PATH

Mark Johnson, Chappaqua, N.Y., and Reinhard Ulrich, Leonberg, Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Göttingen, Fed. Rep. of Germany

Filed Apr. 17, 1979, Ser. No. 30,945
Int. Cl.³ G01C *3/08*
U.S. Cl. 356—5 **40 Claims**



1. An apparatus for measuring the influence of physical parameters upon the length of a path, comprising: an optical length-measuring device responding to a change in the path length including an elastically stretchable optical fiber mounted in a pretensioned manner at intervals along the path at supporting points which are subjected to a change in position with a change in the length of the path to thereby change the length of the optical fiber in an amount corresponding to the change in path length;

a transit-time measuring device including a lightpulse repeater optically coupled to the optical fiber to form a closed signal path together with the optical fiber, wherein said repeater generates short signal pulses which circulate repeatedly in said path, and means for measuring the total transit time T equal to the transit time t_{opt} of the pulse through the optical fiber and the transit time t_{el} of the pulse through the pulse repeater; and

means for determining a change in the path length by monitoring changes in transit time of the pulse through the optical fiber caused by changes in the length of the optical fiber brought about by changes in the path length to which the optical fiber is coupled.

4,269,507

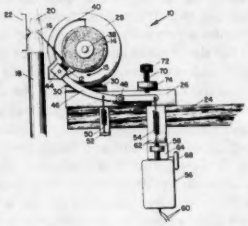
METHOD AND APPARATUS FOR PULVERIZING SOLID MATERIALS WITH A GRINDSTONE AND INJECTING PARTICLES THEREOF INTO A FLAME FOR ANALYSIS

Jonathan Allen, Hopewell, and Robert K. Gould, East Windsor Township, Mercer County, both of N.J., assignors to Aerochem Research Laboratories, Inc., Princeton, N.J.

Filed Oct. 4, 1979, Ser. No. 81,938
Int. Cl.³ G01N *1/22, 21/72*
U.S. Cl. 356—36 **14 Claims**

1. In a test apparatus for analyzing solid materials including a flame analyzing instrument and a flow of combustible gas culminating in a flame, the improvement comprising:

rotating grinding means for pulverizing a solid sample of material and propelling ground particles thereof into said combustible gas; and,



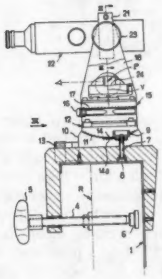
pressure means for pressing said solid sample against said grinding means.

4,269,508

DEVICE FOR ADJUSTING THE AZIMUTHAL AND INCLINATION DIRECTIONS OF A WAVE REFLECTOR

Yves F. Le Nevez, Cachan, France, assignor to Societe Anonyme de Telecommunications, Paris, France

Filed Jul. 19, 1979, Ser. No. 58,780
Claims priority, application France, Jul. 19, 1978, 78 21452
Int. Cl.³ G01C *1/02*
U.S. Cl. 356—249 **2 Claims**

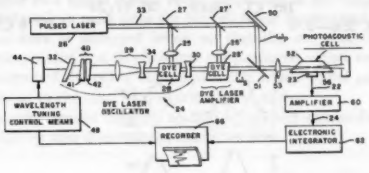


1. A device for adjusting the azimuthal and inclination directions of a wave reflector, notably for Hertzian bonds, which comprises a base plate adapted to be fastened to a reference surface of the reflector, a cradle rigid with said base plate and supporting a pivoting element movable in the plane of the adjustment inclination through an angle readable in relation to said cradle, said inclination movable element supporting an element rotatably mounted about an axis perpendicular to the inclination pivot axis, and constituting a movable azimuthal element movable through an angle readable in relation to said inclination movable element, said azimuthal movable element supporting a sighting telescope movable for inclination, the inclination and azimuth movable assembly carrying an air-level whereby the reflector can be brought to the displayed inclination value by locking the air bubble, and also such that the verticality of the azimuthal pivot axis can be obtained by adjusting the base plate fastening to the reflector in order to bring the reflector to the desired azimuth by causing the telescope sighting, under a predetermined azimuthal angle, to coincide with the direction of the wave transmitter or with the direction of the receiver of reflected waves.

4,269,509
PHOTOACOUSTIC RAMAN SPECTROSCOPY

Michael J. Berry, Chatham, and Joseph J. Barrett, Morris Plains, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 909,859, May 26, 1978, Pat. No. 4,197,009. This application May 2, 1979, Ser. No. 34,512
The portion of the term of this patent subsequent to Apr. 8, 1997, has been disclaimed.
Int. Cl.³ G01J *3/44*
U.S. Cl. 356—301 **11 Claims**



1. Apparatus for analyzing material, comprising:

a. radiation source means for generating two coherent beams or monochromatic light;

b. tuning means for adjusting the frequency difference between said beams of radiation to equal substantially the vibrational frequency of a preselected constituent of said material;

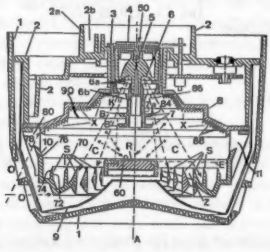
c. projecting means for directing said beams of light through said material to increase molecular energy of a preselected species of said material and thereby produce a detectable signal in the form of a pressure wave;

d. detecting means for indicating the magnitude of said signal, said detecting means including a variable frequency bandwidth amplifier adjusted to transmit preselected acoustic frequencies of said pressure wave.

4,269,510
SMOKE DETECTOR

Zoltan Horvath; Jürg Muggli, both of Männedorf; Hans Ackermann, Stäfa, and Erwin Tresch, Männedorf, all of Switzerland, assignors to Cerberus Ag, Männedorf, Switzerland

Filed Oct. 9, 1979, Ser. No. 82,613
Claims priority, application Switzerland, Dec. 21, 1978, 13000/78; Dec. 21, 1978, 13001/78
Int. Cl.³ G01N *21/53*; G08B *17/10*
U.S. Cl. 356—338 **9 Claims**



1. A smoke detector comprising:

a radiation source for transmitting radiation into a substantially conical ring-shaped direct radiation region and having a cone axis;

a radiation receiver arranged externally of the direct radiation region in the cone axis;

said radiation receiver receiving radiation scattered by particles located within the direct radiation region;

means bounding the conical ring-shaped direct radiation region;

said bounding means being arranged externally of a direct receiving region of the radiation receiver;

said bounding means including web means surrounding the radiation receiver at all sides and limiting the radiation region in the radiation direction of the radiation source;

said web means being arranged in a substantially ring-shaped configuration and rotationally symmetrical with respect to the cone axis;

said web means comprising a plurality of adjacently situated spaced webs defining between adjacent webs intermediate spaces;

each of said webs having an inner surface arranged approximately parallel to the cone axis;

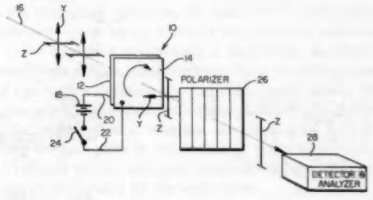
each of said webs further having an outer surface which encloses an acute angle with the cone axis; and

the angle which the outer surface of each web encloses with the cone axis is smaller than the angle between the direct radiation impinging onto the webs and the cone axis, in order to thereby exclude direct radiation from impinging upon said outer surfaces.

4,269,511
APPARATUS AND METHOD FOR MEASURING THE MAGNITUDE OF POLARIZATION OF LIGHT

Phillip Erwin, Libertyville, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 15, 1979, Ser. No. 12,252
Int. Cl.³ G02F *1/13*; G01J *4/00*
U.S. Cl. 356—368 **2 Claims**



1. Apparatus for accurately determining the polarization magnitude of light emitted from a source in accordance with the expression $(I_z-I_y)/(I_z+I_y)$, I_z being the intensity of one polarization component of said light at a first polarization angle, and I_y being the intensity of a second polarization component of said light at a second polarization angle of 90° with respect to said first polarization angle, said apparatus comprising:

a polarizer having a fixed plane of polarization;

a liquid crystal intermediate said light source and said polarizer, said liquid crystal rotating the polarization of said light about 90° to enable said one light component to align with said polarizer plane of polarization and thereby pass through said polarizer;

said liquid crystal having an inherent polarization rotational error value;

means for applying an electric field to said liquid crystal to prevent said polarization rotation by said liquid crystal to enable said second light component to align with said polarizer plane of polarization and thereby pass through said polarizer;

detection means for detecting the value of I_z of said one light component passing through said polarizer during rotation of said one light component by said liquid crystal, and for detecting the value of I_y of said second light component passing through said polarizer during the application of said electric field to said liquid crystal; and

measuring means coupled to said detection means for determining the corresponding magnitude of polarization of said light using said detected values of I_z and I_y;

said measuring means including means for deriving the value of $R=I_x/I_y$, and means for determining the corresponding magnitude of polarization of said light from said expression $(R-1)/(R+1)$;

compensating means for correcting the derived values of $R=I_x/I_y$ to compensate for said polarization rotational errors inherent in said liquid crystal;

said compensating means including memory means for storing a respective correction factor, C, determined for a range of said derived R values as a function of R values for known magnitudes of polarization during an initial calibration operation;

said compensating means further including comparator means responsive to a respective derived R value for selecting a respective correction factor C, from said memory means during determination of said magnitude of polarization; and

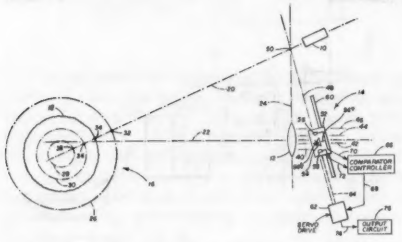
said measuring means includes for applying said selected respective correction factor, C, to a respective derived value of R during determination of said magnitude of polarization.

4,269,512

ELECTRO-OPTICAL POSITION-MONITORING APPARATUS WITH TRACKING DETECTOR

John C. Nosler, 2587 Floral Hill Dr., Eugene, Oreg. 97403

Filed Feb. 21, 1979, Ser. No. 13,740
Int. Cl.[3] G01B *11/14*; G01N *21/86*
U.S. Cl. 356—375 **4 Claims**



1. In an electro-optical object-position-monitoring system including a beam-projecting non-traveling light source, and imaging means for collecting and transmitting light from said source which is reflected by a monitored object, receptor means positioned to receive reflected light transmitted by said imaging means, operable to produce an output response interpretable to indicate monitored object position, said receptor means comprising

a carriage mounted adjacent said imaging means for reversible movement along a path generally transverse to the transmission axis of said imaging means,

a receiver mounted on said carriage disposed to receive light transmitted by said imaging means, and operable to divide such light for transmission along two different optical paths, with the amount of light transmitted along each path dependent on the position of said receiver relative to light transmitted by said imaging means,

photodetector means for each path, each responsive to light transmitted therealong to produce a signal reflective of the intensity of light received by the photodetector means, and

means operatively interposed between said photodetector means and said carriage, operable in response to signals produced by the former to effect movement of the latter so as to equalize such signals,

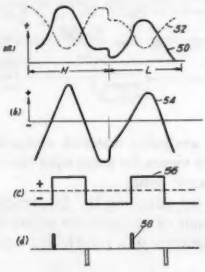
said path being oriented whereby, at all positions of said carriage therealong, and under circumstances wherein an image of reflected light causes said two photodetectors to produce equal signals, such image is in focus on said receiver.

4,269,513

ARRANGEMENT FOR SENSING THE SURFACE OF AN OBJECT INDEPENDENT OF THE REFLECTANCE CHARACTERISTICS OF THE SURFACE

Paul L. DiMatteo, Huntington; Joseph A. Ross, Fort Salonga, and Howard K. Stern, Greenlawn, all of N.Y., assignors to Solid Photography Inc., Melville, N.Y.

Continuation-in-part of Ser. No. 608,265, Aug. 27, 1975, Pat. No. 4,175,862. This application Jan. 18, 1979, Ser. No. 4,301
Int. Cl.[3] G01B *11/00, 11/24*
U.S. Cl. 356—376 **9 Claims**



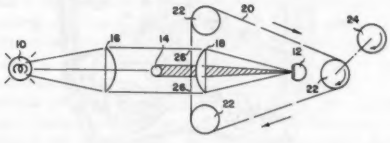
1. A method for defining the intersection of a projection field with the surface of an object independent of reflectance characteristics of the object surface, comprising the steps of: irradiating said surface with a first irradiating pattern; irradiating said surface with a second irradiating pattern related inversely to said first pattern; recording said first pattern after reflection from the object surface; recording said second pattern after reflection from the object surface; comparing the two recorded patterns; and determining from the comparing step the points at which the two recorded patterns have substantially equal values, said points defining the intersection of said projection field with said surface independent of reflectance characteristics of the surface.

4,269,514

NON-CONTACT SCANNING GAGE

Carl A. Vossberg, Umatilla, Fla., assignor to Electron Machine Corporation, Umatilla, Fla.

Filed Sep. 25, 1978, Ser. No. 945,350
Int. Cl.[3] G01B *11/10*
U.S. Cl. 356—386 **4 Claims**



1. A non-contact gage for measuring a dimensional characteristic of a specimen comprising in combination:

a source of radiation on one side of the specimen;

a radiation detector facing and aligned with said source on the opposite side of the specimen;

linear scanning means including a constant speed belt, opaque to said radiation and having a plurality of equal parallel non-opaque areas extending transversely across said belt and spaced equally from each other a distance at least as large as the dimensional characteristic to be mea-

sured, located and movable between said source and the specimen for periodically sweeping a beam of radiation across the specimen causing said detector to generate a composite signal including a frame signal and an intelligence signal, the ratio of the duration of said intelligence to said frame signal being proportional to the desired dimensional characteristic of the specimen;

means for separating said intelligence signal from said frame signal including a peak to peak signal detector connected to be driven by the output of said radiation detector and a pair of comparators, each having a signal input and bias input said signal inputs being connected to the output of said peak to peak detector for reference biasing said comparators at different levels so that the on time of one comparator is a dimensional proportional signal and the output of the other comparator is a frame signal proportional to the time of one scan cycle; and

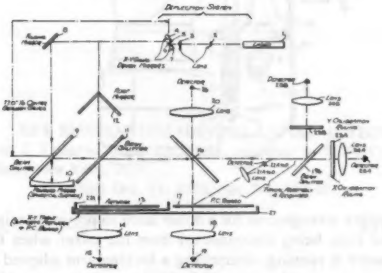
indicating means coupled to said separating means for displaying said dimensional characteristic.

4,269,515

ELECTRO-OPTICAL SYSTEM FOR INSPECTING PRINTED CIRCUIT BOARDS

Norman G. Altman, Stamford, Conn., assignor to Altman Associates, Inc., Stamford, Conn.

Filed Aug. 7, 1979, Ser. No. 64,519
Int. Cl.³ G01B *11/00*
U.S. Cl. 356—394 **7 Claims**



1. A system for inspecting a printed circuit board constituted by an insulating board having a conductive pattern thereon which creates interconnections between circuit elements mounted on the board, the board often having holes therein for effecting electrical connections to these elements, said conductive board pattern being derived from an original transparent artwork, said system comprising:

A. means to deflect a laser beam in the X and Y directions to generate a raster scan;

B. means to optically split the raster scan to simultaneously examine corresponding sections on the conductive pattern on the board and that appearing on the original transparent artwork from which the board pattern is derived, the artwork possessing the same scale and orientation as the desired conductive pattern and therefore representing the nominal pattern required for the board;

C. means to detect the light transmitted through the artwork and the light reflected by the board during the simultaneous scan thereof; and

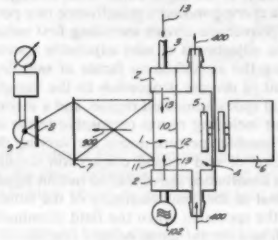
D. means including a computer responsive to signals generated by said detection means to make a comparison between the dimensions of the conductors in the pattern and the spacings therebetween on the board and on the artwork to determine the extent of disparities therebetween.

4,269,516

OPTODE

Dietrich W. Lübbers, Dortmund, and Norbert Optiz, Bochum, both of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Göttingen, Fed. Rep. of Germany

Filed Jul. 19, 1977, Ser. No. 817,108
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1976, 2632710
The portion of the term of this patent subsequent to Jan. 18, 1994, has been disclaimed.
Int. Cl.³ G01N *21/84*
U.S. Cl. 356—427 **14 Claims**



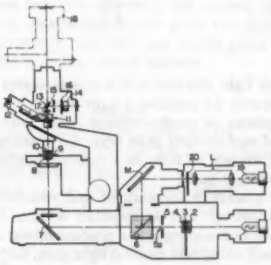
1. An apparatus for the optical measurement of the concentration of a component of a substance to be analyzed, of the type comprising a source of monochromatic excitation radiation, means defining an indicator space containing an indicator excited by the excitation radiation, the side of the means defining the indicator space to be brought into contact with the substance to be analyzed comprising a membrane permeable for the component whose concentration is to be determined, the side of the means defining the indicator space facing the monochromatic excitation radiation being transmissive for the radiation, the improvement wherein the apparatus includes means setting the indicator in the indicator space into motion within and relative to the indicator space during the measurement operation performed by the apparatus.

4,269,517

MICROSCOPE FOR QUANTITATIVE DETERMINATION OF SUBSTANCE IN SPECIMEN

Ichiro Sawamura, Hachioji; Kensaku Miyazaki, Machida, and Ken Yonekubo, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 20, 1977, Ser. No. 834,896
Claims priority, application Japan, Sep. 25, 1976, 51/114398
Int. Cl.³ G01J *3/42*
U.S. Cl. 356—432 **8 Claims**



1. A microscope for use in the quantitative determination of the substance in a specimen comprising:

a full field illumination unit;

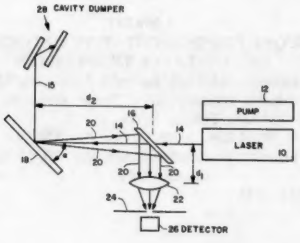
a spot illumination unit using monochromatic light;
a photoelectric transducer for receiving light which is transmitted through said specimen;
an arithmetic unit connected to said photoelectric transducer for photometry;
means for activating both the full field and spot illuminations to facilitate movement of the specimen into alignment with a spot illuminated region while observing the specimen; and
adjustable aperture means for adjusting the amount of illumination so that the spot illuminated region is substantially in conformity with the outline of the specimen;
said arithmetic unit including a first conversion circuit including means for converting a DC signal corresponding to the amount of the light transmitted through the specimen into a corresponding transmittance rate per unit area, said first conversion circuit including first means responsive to the adjustment of said adjustable aperture means for varying the amplification factor of said first conversion circuit in inverse proportion to the variation of the area of said spot illuminated region, and a second conversion circuit including means responsive to the adjustment of said adjustable aperture means for varying the amplification factor of said second conversion circuit for converting an absorbance signal into an output signal which is proportional to the total quantitity of the substance contained in the specimen when the field illumination unit is turned off, said output signal being a function of the product of an output from said photoelectric transducer and the area of the spot illuminated region, said second conversion circuit including second means for varying the amplification factor of said second conversion circuit in direct proportion to the variation of the area of said aperture.

4,269,518

STRAY LIGHT ELIMINATOR IN A SCATTEROMETER

John P. Rahn, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 18, 1979, Ser. No. 49,693
Int. Cl.[3] G01N *21/01;* G02B *27/14*
U.S. Cl. 356—445 **15 Claims**



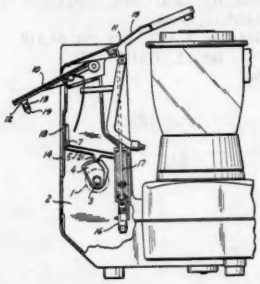
1. A stray light eliminator in a scatterometer comprising:
a light source for emitting a light beam;
a beamsplitter of predetermined reflectivity placed in the path of said emitted light beam for scattering a predetermined amount of light in a direction different from said emitted light path;
a mirror placed in the path of said emitted light that has passed through said beamsplitter without being scattered for reflecting said light in a predetermined direction other than back along said emitted light path, said mirror having an inherent tendency to retroscatter some light back along said emitted path and into said light source after passing back through said beamsplitter where part of said retroscattered light is reflected in a direction unique to said retroscattered light;
a lens placed in the path of said retroscattered light which has been reflected by the beamsplitter for converging said retroscattered light to a predetermined spot, the distance from the beamsplitter to the lens being much smaller than the distance from said mirror to the beamsplitter to increase the detected signal retroscattered from said mirror as compared with the detected noise caused by light scattered from said beamsplitter;
an apertured screen placed in the path of said converged light for limiting light behind said screen to only said converged light which passes through said aperture;
a detector placed behind said screen for measuring the level of light passing through said aperture; and
a beam dumper placed in the path of reflected light from said mirror for absorbing unwanted light.

4,269,519

SAFETY ARRANGEMENT FOR A MIXER CATCH

Hans J. Birr, Wuppertal, Fed. Rep. of Germany, assignor to Vorwerk & Co. Interholding GmbH, Wuppertal, Fed. Rep. of Germany

Filed Jan. 7, 1980, Ser. No. 110,388
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1979, 2900987
Int. Cl.[3] B01F *13/04;* A47J *27/09*
U.S. Cl. 366—206 **4 Claims**



1. A safety arrangement for a mixer latch to prevent a mixer container from being disconnected from the mixer when the mixer motor is running, comprising a locking arm adapted to close the mixer container, said locking arm being provided with a catch; a base on the container an opening in a side wall thereof to receive said catch; a motor contactor electrically connected to a mixer motor and having an axis; a cam mounted on said axis of said motor contactor, and being formed with a curved surface on an outer side thereof; a link mounted on said base and adapted to engage said curved surface for a swingable movement of said link in a vertical plane; and a lever pivotally mounted in said base and having an end operatively connected to said link, said lever being adapted to engage said catch while the latter projects into said opening of the base in the locking position of the latch.

4,269,520

CARTRIDGE FOR DYE-IMPREGNATED ENDLESS RIBBON

Gerhard Gabler, Zurich, Switzerland, assignor to Precisa AG Rechenmaschinenfabrik, Zurich, Switzerland

Filed Dec. 26, 1978, Ser. No. 973,094
Int. Cl.[3] B41J *32/00*
U.S. Cl. 400—196 **17 Claims**

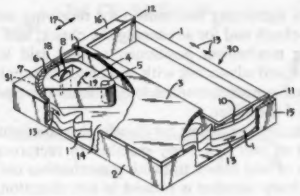
1. A cartridge including a housing for storing an endless dye-carrying ribbon in several locations in said housing, and for operatively withdrawing successive portions therefrom, said portions being arranged to be advanced in a predeter-

mined direction from a first location to a fourth location downstream of said first location, comprising in combination:

ribbon conduit means located at a second location downstream of said first location for returning and guiding the successive ribbon portions into said housing,

a single unitary resilient stationary member, secured inside said housing,

a single substantially rigid driven member arranged in said housing, operable to be advanced in said predetermined



direction, and including two outer parts, at least one of said outer parts having a set of teeth along the periphery of said driven member, said teeth in cooperation with said stationary member engaging successive portions of said ribbon, a groove being defined between said outer parts,

said members being located at a third location downstream of said second location and disposed between said second and fourth locations, said stationary member resiliently pressing said ribbon into engagement with said teeth, and

an arm reaching into said groove to make contact therewith.

4,269,521

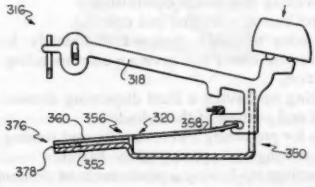
KEY MECHANISM HAVING A SNAP ACTION

Scott J. Longrod, Danbury, Conn., assignor to SCM Corporation, New York, N.Y.

Filed Oct. 11, 1978, Ser. No. 950,482

Int. Cl.³ B41J *5/08*

U.S. Cl. 400—472 **53 Claims**



1. A striker assembly for striking a selected member disposed proximate thereto, which assembly comprises:

a resilient elongated striker member having a free end and an actuation end;

means supporting said striker member intermediate said free end and said actuation end;

means for displacing said actuation end of said striker member for flexure about said supporting means; and

an element independent of said striker member for restraining movement of said free end of said striker member during a partial displacement of said actuation end, said element releasing said free end during a final displacement of said actuation end causing said free end to strike said selected member.

4,269,522

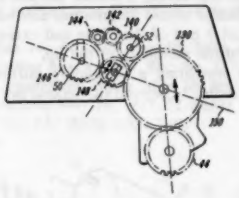
BI-DIRECTIONAL RECORD MATERIAL FEED APPARATUS

Leo Levinson, Berkley, and William D. Rempel, San Mateo, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 20, 1978, Ser. No. 917,233

Int. Cl.³ B41J *15/00*

U.S. Cl. 400—616.1 **7 Claims**



1. A record material feed apparatus for use with a printing machine of the type including a platen and drive means for rotating said platen about its longitudinal axis, said apparatus comprising:

a frame capable of being attached to said printing machine adjacent the platen thereof;

first and second drive shafts each rotatably mounted on said frame;

first and second drive assemblies respectively mounted on said first and second drive shafts, each drive assembly including means for engaging a marginally punched record material loaded thereon and means for feeding said record material in response to the rotation of the respective drive shaft, said first drive assembly comprising at least one pin wheel feeding assembly and said second drive assembly comprising at least one tractor feed assembly; and

a third drive assembly mounted to said frame and including means for engaging the platen drive means of said printing machine and means responsive to such engagement and the operation of said drive means for selectively rotating said first and second drive shafts in predetermined rotational directions, whereby said first and second drive assemblies are capable of respectively advancing said marginally punched record material in opposite directions, said third drive assembly comprising a gear train including a plurality of gears arranged in a closed loop, said plurality of gears including a first gear engageable with the drive means of said printing machine, a second gear mounted on said first drive shaft for driving said first drive shaft, a third gear mounted on said second drive shaft for driving said second drive shaft, and a fourth idler gear engaged between said first and second gears such that said first, second and fourth gears are aligned along their line of centers, said first and fourth gears being adjustable relative to said line of centers.

4,269,523

PENCILS AND PENCIL CAPS

Joel B. Kay, 103 La Fayette, Corlett Dr., Illovo, Johannesburg, Transvaal, South Africa (2196)

Filed Apr. 4, 1979, Ser. No. 26,987

Claims priority, application South Africa, Apr. 10, 1978, 78/2018

Int. Cl.³ B43K *9/00, 29/06*

U.S. Cl. 401—51 **9 Claims**

1. A cosmetic pencil kit including:

a cosmetic pencil comprising a core of waxy coloring medium in substantially rod form and a sheath containing the core;

and a cap comprising:

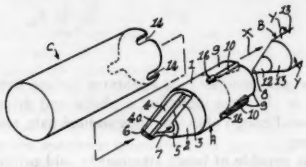
a tubular body adapted to removably fit directly over an extremity of the pencil;

a hollow tip on the body extending longitudinally from one end thereof;

a longitudinally extending sharpening blade on the tip, the blade lying obliquely to the longitudinal axis of the hollow body and being supported along its entire length;

said tip being provided with an outlet, said outlet having a first portion (3) extending longitudinally along the blade, and having a second portion (7) in a plane perpendicular to said longitudinal axis and located short of the outer end of the blade and extending around only part of the periphery of the tip,

the tip presenting a protruding portion which extends longitudinally beyond the second portion of said outlet



around only part of the periphery of the tip and which supports the blade up to its outer end,

the blade being operative to pare away the pencil sheath to expose and sharpen an end of the core on relative rotation of the pencil and the cap when the tubular body is fitted over an extremity of the pencil,

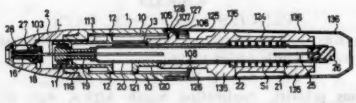
the second portion of said outlet having a size relative to the cross-sectional dimensions of the pencil and being located relative to the blade such that substantially the entire length of the sharpened end of the pencil core can project through the second portion of said outlet in the tip, and be located adjacent to, and supported along its length by the said protruding portion of the tip, but such that the sharpened end of the core cannot extend beyond the outer end of the blade or said protruding portion of the tip when the pencil is pushed home in the cap.

4,269,524

MECHANICAL PENCIL

Yasuyuki Hashimoto, Nishinomiya, and Osamu Torii, Kyoto, both of Japan, assignors to Ancos Co., Ltd., Osaka, Japan

Filed Apr. 17, 1979, Ser. No. 30,803
Claims priority, application Japan, Apr. 19, 1978, 53-45330
Int. Cl.³ B43K *21/16*
U.S. Cl. 401—65 **12 Claims**



1. A mechanical pencil comprising:

a main hollow body including a first body member and a second body member, said hollow body having a mouth opening at an end thereof, said first body member being rotatable with respect to said second body member and said first and second body members engaging each other,

a slider retractable in said opening of the main hollow body, said slider having a lead retainer for frictionally gripping lead and an opening at one end thereof,

a lead case within said main hollow body, containing extra leads therein,

first biasing means for biasing said lead case in a direction away from said mouth opening,

a lead gripping chuck connected at the front end of said lead case,

a chuck tightening mechanism for receiving and tightening said chuck and for advancing the chuck, said chuck tightening mechanism positioned around said lead gripping chuck and advancing with said chuck to supply a new lead having a predetermined length from the opening in one end of the slider,

first transferring means for transferring the rotational movement of said first body member to reciprocating movement of said chuck tightening mechanism only when said first body member is rotated in one direction, and

second transferring means for transferring the rotational movement of said first body member to reciprocating movement of said lead case,

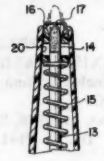
whereby a new lead is supplied from the opening of the main hollow body by advancement of said chuck as a result of the rotation of the first body member.

4,269,525

WRITING INSTRUMENT WITH RETRACTABLE TIP

Robert B. Melikian, 235 E. 51st St., New York, N.Y. 10022

Continuation of Ser. No. 869,723, Jan. 16, 1978, abandoned. This application Jun. 25, 1979, Ser. No. 51,565
Int. Cl.³ B43K *24/00*
U.S. Cl. 401—108 **5 Claims**



1. A writing instrument comprising

a barrel having a writing end opening,

a cylinder movably disposed completely longitudinally within the barrel and having a corresponding writing end portion,

a writing tip having a fluid dispensing element carried on said end portion of the cylinder,

means for projecting and retracting said writing tip through the writing end opening of the barrel,

said writing tip having a predetermined perimetric size for projection through the writing end opening of said barrel, said writing end opening having a fixed size relative to the size of the writing tip sufficient for permitting passage of said tip therethrough with clearance between said tip and said writing end opening during such projection, and a cup-shaped flexible unitary shield having an open base portion stationarily disposed within and rigidly secured to said barrel in proximity to said writing end opening and having a protruding apertured portion extending externally from the base portion and extending outwardly across the writing end opening thereof to thereby close said opening, said apertured portion having an aperture defined therein, said flexible shield being movable at said apertured portion by contact with said tip upon the projection of said tip from said barrel to expand said apertured portion and remain in contact with said fluid dis-

pensing element and forming, when closed, a barrier against the passage of air.

4,269,526

PEN AND INTEGRAL CAPILLARY STORE

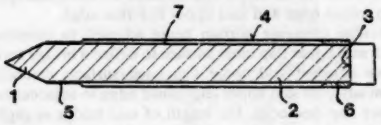
Georges Dupre, Crissier, Switzerland, assignor to Baumgartner Papier S.A., Switzerland

Filed Apr. 30, 1979, Ser. No. 34,587

Claims priority, application Switzerland, May 2, 1978, 4752/78

Int. Cl.³ B43K *5/00*

U.S. Cl. 401—198 **1 Claim**



1. A writing pen comprising a capillary store for storing and delivering a writing liquid and a writing point connected to the store, the writing point and the store consisting of the same material and forming a single unit, the material forming the writing point and the store comprises cellulose acetate reinforced by at least 20% triacetine, said store being in the form of a rod with the writing point being formed at one end of said rod, the density of the triacetine reinforced material forming the writing point and the store being from 0.14 to 0.48 g/cm^3, and in which the material of the writing point and the store further comprises polyester filaments fused together to reinforce the material.

4,269,527

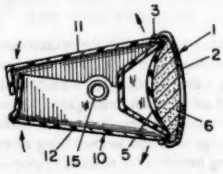
APPLICATOR FOR PULVERIZED SUBSTANCES

Donald E. Lipfert, Woolwich, Me., and Willfred Goldschmidt, Weston, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 17, 1979, Ser. No. 85,560

Int. Cl.³ A45D *33/02*

U.S. Cl. 401—200 **3 Claims**



1. An applicator for pulverizable substances comprising in cooperation:

(a) a resilient container adapted to contain a pulverized substance, said resilient container having a transverse wall and a longitudinal wall extending from said transverse wall to an open end of said resilient container;

(b) a permeable membrane fixed over the open end of the resilient container through which may pass a pulverized substance;

(c) an elastomeric diaphragm under tension for releasing the pulverized substance held within said resilient container, said diaphragm being interposed between the permeable membrane and the transverse wall of said resilient container such as to exert the pulverized substance against said permeable membrane; and

(d) a housing device which is attached to said diaphragm and said membrane, the housing device comprising two sections attached at an axial point located approximately midpoint along each section's vertical such that the compression of the housing sections below the axial point causes the portion of the housing sections located above the axial point to move apart in a clothespin-like movement which motion is translated to the diaphragm attached to the housing sections at a point located above the axial point, said movement causing the diaphragm tension to increase thereby dispensing the pulverized substance.

4,269,528

FOUNTAIN PEN WITH SPECIFIC TUBULAR NIB

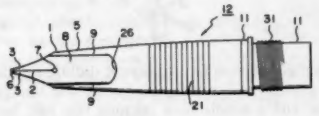
Takeo Oki, Hatano, and Shunichi Hirosawa, Hiratsuka, both of Japan, assignors to Pilot Man-Nen Hitsu Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 907,336, May 18, 1978, abandoned. This application Apr. 8, 1980, Ser. No. 138,428

Claims priority, application Japan, May 19, 1977, 52/63295; May 19, 1977, 52/63296; May 19, 1977, 52/63297

Int. Cl.³ B43K *1/06, 9/00*

U.S. Cl. 401—231 **14 Claims**



1. A tubular nib for a fountain pen, said nib having a tubular part and a single beak-shaped part projecting from one end of the tubular part and provided with a longitudinal slit extending generally parallel to the axis of said tubular part to form a writing section having a pointed end with two resilient tip portions on opposite sides of said slit which spread apart when a reaction force to a writing force exerted on said nib acts on said tip portions from a direction radially outwardly from said axis of said tubular part, said slit extending from said beak-shaped part into said tubular part, said tubular part having a grip spaced along the nib from the beak-shaped part toward the end remote from the beak-shaped part, said nib having a slit-widening inhibiting section for inhibiting said tip portions from spreading apart excessively even when a large writing force is exerted on said tubular nib, said slit-widening inhibiting section extending from the pointed end of the writing section toward the end of the nib remote from the beak-shaped part, and beyond the innermost end of the slit, said section having a radius of curvature, in cross-section, larger than that of said tubular part, and said nib having shoulders between the larger radius of curvature of the slit-widening inhibiting section and the remainder of the tubular part extending generally in the axial direction of the nib and a transverse shoulder between the slit-widening inhibiting section and the remainder of the tubular part, the slit-widening inhibiting section having a surface recessed relative to the surface of the tubular part.

4,269,529

PEN WITH ARTICULATE HANDLE

John D. McCollough, 10715 Rochester Ave., Los Angeles, Calif. 90024

Filed Nov. 13, 1978, Ser. No. 959,762

Int. Cl.³ B43K *1/10*

U.S. Cl. 401—258 **1 Claim**

1. In a pen of the technical type for free-hand writing having a point, a collar in which said point is mounted, an ink passage extending to said point, a weight and wire assembly reciprocably disposed within said passage, and an ink reservoir disposed above said collar and extending upwardly therefrom in communication with said passage, wherein the improvement comprises:

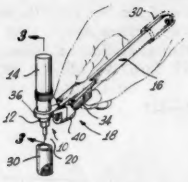
a bracket attached to said collar and having a normally vertical bracket face thereon and a normally horizontal bracket bore opening into said bracket face;

a connection block having first and second perpendicular

connection faces and having first and second perpendicular connection block bores opening into said first and second connection faces, respectively, said first connection face opposing said bracket face to permit sliding, rotational, relative movement;

first adjustment screw means received by said bracket bore and said first connection block bore for holding said connection block in a fixed position relative to said bracket;

an elongated handle having three concave finger grip surfaces and thereby adapted to be held in a selected orientation by the hand of a user, a handle face opposing said



second connection face to permit sliding, rotational, relative movement between said handle and said connection block, and a handle bore opening into said handle face; and

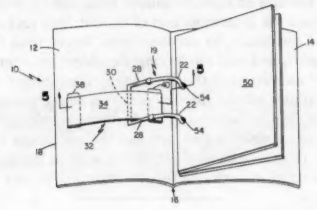
a second adjustment screw means received by said handle bore and said second connection block bore for holding said handle in a fixed position relative to said connection block, whereby said point can be maintained in a predetermined orientation with respect to a writing surface independently of the orientation of said handle and finger grips.

4,269,530

DOCUMENT RETAINING SYSTEM

Joseph Weber, 1105 Massachusetts Ave., Cambridge, Mass. 02138

Filed Oct. 22, 1979, Ser. No. 86,940
Int. Cl.³ B42F *13/10*
U.S. Cl. 402—15 **9 Claims**



1. A document retaining system for securing perforated sheets of paper comprising

a folder having upper and lower flaps hingedly joined along one edge of each said flap, each said flap having a free edge opposing said joined edge,

a fastener comprising

an elongated flexible member having opposite end portions arranged to extend through spaced apart perforations in said sheets and an intermediate base portion for attachment to said lower flap inner surface parallel with and adjacent to said joined edge, and

a stiff bridge member providing a generally U-shaped portion having two ends joined by a transverse element, said bridge member ends being arranged to engage releasably with opposite ends of said flexible member, said transverse element maintaining said flexible member end portions spaced apart, and

a fastener travel limiter of flexible tear-resistant sheet material, having upper and lower surfaces, and comprising

at least two attachment portions providing adhesive on said lower surface thereof, and

a bridge member engaging portion extending lengthwise of said travel limiter,

said travel limiter being sized and adapted for being secured at its said attachment portions with its said lower surface adjacent said inner surface of said folder upper flap, with said bridge member engaged between said folder upper flap and said bridge engaging portion,

the overall length of said travel limiter being adapted to permit said travel limiter to be secured between said upper flap joined edge and said upper flap free edge,

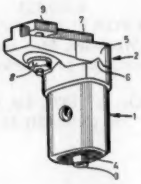
said bridge engaging portion being adapted to cooperate with said upper flap inner surface to define a bridge travel space adjacent said upper flap inner surface, extending from adjacent said upper flap joined edge to adjacent said upper flap free edge, the length of said bridge engaging portion being adapted to define a said bridge travel space permitting free travel of said bridge parallel with said upper flap inner surface during rotation of said upper flap with respect to said lower flap through an angle of about 180 degrees.

4,269,531

ATTACHMENT DEVICE

Hans R. Brolin, Parkvägen 24, S-560 41 Mullsjö, Sweden

Filed Oct. 3, 1979, Ser. No. 81,532
Claims priority, application Sweden, Nov. 22, 1978, 7812045
Int. Cl.³ F16C *11/00*
U.S. Cl. 403—97 **5 Claims**



1. An attachment device for attachment of a forward profile bar of an awning to a hinge arm comprising a profile portion comprising a first surface for attachment to said forward profile bar and an opposing elongated second surface,

a shaft portion comprising a first surface for attachment to said hinge arm and an opposing elongated second surface,

a coupling member for resiliently connecting said portions to each other such that said second surfaces face each other, and

first returning means positioned on said opposing surface of said profile portion, and second returning means positioned at said opposing surface of said shaft portion and removeably engaging said first returning means, for maintaining said portions in a predetermined position during normal conditions of said awning and returning said portions to said predetermined position when said portions are caused to move relative to each other during operation of said awning.

4,269,532

COUPLING FOR FURNITURE AND THE LIKE

Vincent P. Sorrentino, Parkland, Fla., assignor to Bright Industries Inc., Ft. Lauderdale, Fla.

Filed Jul. 10, 1979, Ser. No. 56,352
Int. Cl.³ F16B *7/08*
U.S. Cl. 403—191 **3 Claims**

1. A coupling for an article of furniture having intercon-

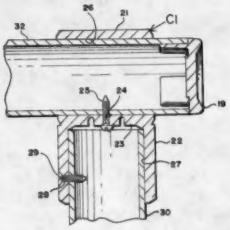
nected vertically and horizontally disposed lengths of tubing comprising

(a) a plurality of T shaped couplings each having

(b) a tubular sleeve including a through bore for the reception of a length of the tubing and

(c) an integral substantially right angularly disposed sleeve portion for the reception in endwise engagement of a length of said tubing, and having

(d) an end wall within the right angularly disposed sleeve portion closing off the inner end thereof,



(e) a screw projecting through said end wall and the tubing extending through the tubular sleeve to secure the coupling to the tubing, and

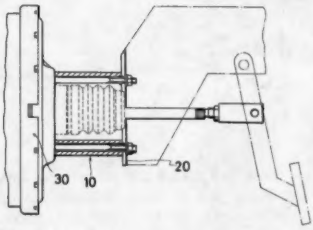
(f) a screw extending through the right angularly disposed sleeve portion of the coupling to engage the tubing therein to secure to the coupling the length of tubing extending thereinto in endwise engagement, and said screw having a head counter-sunk within the surface of said sleeve.

4,269,533

SPACER

Nobuo Mashiki, Tokyo, and Koichi Chigusa, Imizu, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 27, 1978, Ser. No. 946,427
Claims priority, application Japan, Sep. 30, 1977, 52-132553
Int. Cl.[3] F04B *39/00*; F16D *1/06*
U.S. Cl. 403—410 **1 Claim**



1. A spacer for securely separating members mutually attached by means passing through the spacer, comprising:

(a) a one-piece, hollow body having four integrally formed walls open at two opposed ends and having a substantially rectangular cross section; and

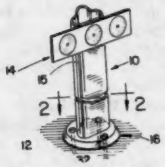
(b) a pair of substantially parallel inward projections formed in the interior of said walls at each corner of said body forming a channel partially opened to the interior of said hollow body at each corner of said body, the interior of said body being free of any further structure, and said body being capable of manufacture by extrusion.

4,269,534

REPLACEABLE GUIDE POST

John E. Ryan, 18113 Mt. Washington, Fountain Valley, Calif. 92708

Filed Aug. 20, 1979, Ser. No. 68,225
Int. Cl.[3] E01F *9/01*
U.S. Cl. 404—10 **6 Claims**



1. A guide post defining a road marker and the like, in combination, comprising:

an elongated, pliable, tubular body member defining a post member having a peripheral, outwardly disposed, flange member integrally formed at the bottom thereof;

a base structure adapted to be secured to a ground surface and arranged to receive therein the bottom-flanged portion of said post member;

said base structure comprising a support-base-plate member having an inner annular wall member adapted to be received within the bottom central portion of said post member, and an outer wall member threaded on one side thereof;

said inner and outer wall members defining an annular channel to receive said flange of said guide post therein;

a retainer collar having a central opening therein adapted to receive said post member therethrough, and including an annular threaded groove to receive said outer threaded wall of said base-plate member;

a clamping-ring member positioned to be received in said annular channel so as to be in locking engagement with said flange member of said post, and wherein the lower flange end of said post is interposed between said clamping ring and said inner wall member of said base structure; and

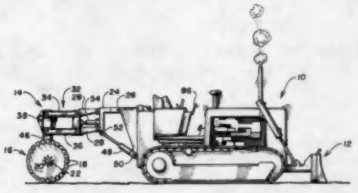
a plurality of protruberances formed on the bottom surface of said clamping ring for locking engagement with said flange member of said post member.

4,269,535

EARTH WORKING IMPLEMENT CONTROL SYSTEM

Gene Schultz, Fargo, N. Dak., assignor to Earl W. Sornsin, Fargo, N. Dak., a part interest

Filed Apr. 27, 1979, Ser. No. 33,960
Int. Cl.[3] E01C *19/38*
U.S. Cl. 404—117 **26 Claims**



1. A vehicle-mounted earth working implement having means connecting the implement to the vehicle for positioning the implement in various positions relative to the ground including a ground working position, the connecting means including:

(a) hydraulic cylinder means connected between the vehicle

and the implement whereby the implement may be raised from and lowered to the ground working position;

(b) a first hydraulic conduit means connected to the hydraulic cylinder means for supplying hydraulic fluid pressure thereto to raise the implement and second hydraulic conduit means connected to the hydraulic cylinder means for supplying hydraulic fluid pressure thereto to lower the implement;

(c) first valve means connected to the first and second hydraulic conduit means for controlling the supply of hydraulic fluid thereto and to the hydraulic cylinder means, the valve means being operable to selectively supply hydraulic pressure to either the first or the second hydraulic conduit means, to prevent the supply of hydraulic pressure to both of the hydraulic conduit means simultaneously or to supply hydraulic pressure to both of the hydraulic conduit means simultaneously;

(d) means connected to the first valve means for delivering hydraulic fluid under pressure thereto;

(e) second valve means, operable between open and closed positions, connected to the second hydraulic conduit means between the hydraulic cylinder means and the first valve means; and

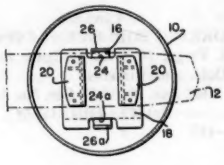
(f) hydraulic pressure accumulator means connected to the second hydraulic conduit line means between the hydraulic cylinder means and the second valve means for receiving hydraulic fluid pressure therefrom, the accumulator means including a pressure container, means dividing the container into a hydraulic fluid pressure chamber for receiving hydraulic fluid pressure from the second hydraulic conduit means and a bias pressure chamber, and means for providing a bias pressure to the bias pressure chamber, the container dividing means being positionally responsive to the hydraulic fluid pressure and the bias pressure to continuously seek a position in the container dependent on the bias pressure and the relative volumes of the two chambers are modified accordingly.

4,269,536

SHOCK ISOLATION MEANS FOR AN EARTH COMPACTOR DRUM

Robert F. Goehler, Greencastle, Pa., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Nov. 19, 1979, Ser. No. 95,638
Int. Cl.³ E01C *19/38*
U.S. Cl. 404—117 **11 Claims**



1. An improved shock isolation means, for an earth compactor drum having an axis, comprising:

a first shock-plate, for mounting thereof to an earth compactor drum frame;

a second shock-plate, for mounting thereof to an earth compactor drum; and

elastomeric means coupling said shock-plates together for relative, resilient, shock-isolating movement therebetween; wherein the improvement comprises:

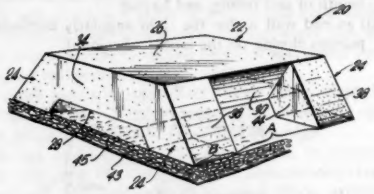
limit stop means carried by at least one of said shock-plates, spaced apart from an adjacent surface of the other of said shock-plates, for contacting engagement of said limit stop means with said surface to limit shock-isolating movement, in vertical, horizontal, and rotary planes normal to the drum axis, between said plates.

4,269,537

REVETMENT UNIT

Raymond J. O'Neill, 11 Chippewa Rd., Yonkers, N.Y. 10710

Filed Jan. 26, 1979, Ser. No. 6,911
Int. Cl.³ E02B *3/06*
U.S. Cl. 405—29 **12 Claims**



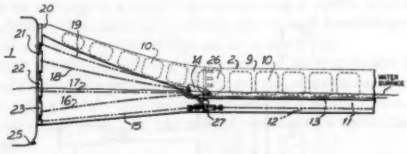
1. A revetment unit for interengagement with other similar revetment units comprising a base, said base being trapezoidal in section and the sides of said trapezoid forming the outer surface of said base, leg means extending from said base to support said base, said leg means extending beyond the periphery of said base and extending below the underside of said base to space the underside of said base above the surface upon which said unit rests, said outer surface of said base being inclined at an angle α with respect to the surface upon which said unit rests, said leg means extending from said base at an angle β with respect to the surface upon which said unit rests, said angles α and β being generally supplementary to permit interlocking engagement of said leg means and said outer surface of said similar unit to prevent relative movement between said unit and said another similar unit.

4,269,538

BARRIER ATTACHED TO THE SIDE OF A SHIP

Nils F. Hauan, Lillestrom, Norway, assignor to Skuteng A/S, Oslo, Norway

Filed Oct. 2, 1978, Ser. No. 947,815
Claims priority, application Norway, Oct. 10, 1977, 773453
Int. Cl.³ E02B *15/04*
U.S. Cl. 405—63 **6 Claims**



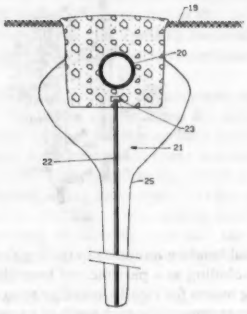
1. A barrier attached to a side of a ship and extending outwardly therefrom, comprising a floatable section and a skirt section depending therefrom, the floatable section being in contact with a surface of the water along a first portion of the barrier, said first portion extending from a free end of the barrier to a first location on the barrier, a second portion of the barrier, near the side of the ship, increasing in height from the first location on the barrier toward the side of the ship, thus forming a barrier sail which extends continuously from a first predetermined location on the side of the ship above the surface of the water down to a second predetermined location on the side of the ship beneath the surface of the water, the floatable section of the barrier extending along an upper edge region of the barrier sail and gradually decreasing in diameter toward the side of the ship, and said barrier sail being inserted into a vertical slot affixed to the side of the ship.

4,269,539

METHOD FOR PREVENTING DAMAGE TO A REFRIGERATED GAS PIPELINE DUE TO EXCESSIVE FROST HEAVING

Scott W. Hopke, Stafford, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Dec. 7, 1978, Ser. No. 967,556
Int. Cl.[3] E02D *19/14;* F16L *1/02*
U.S. Cl. 405—130 19 Claims



1. A method of preventing the deformation of a refrigerated gas pipeline buried in frost-susceptible soil due to frost-heaving from ice lenses beneath said pipeline which comprises:

(a) installing heat pipes in the soil beneath said pipeline such that a temperature differential will exist between said pipeline and the soil surrounding a lower portion of said heat pipes during pipeline operation; and

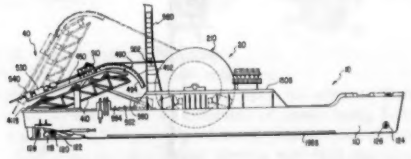
(b) flowing a refrigerated gas through said pipeline such that said heat pipes operate in conjunction with operation of said refrigerated gas pipeline due to said temperature differential to freeze the soil without forming ice lenses capable of heaving said pipeline.

4,269,540

SELF PROPELLED DYNAMICALLY POSITIONED REEL PIPE LAYING SHIP

Stanley T. Uyeda, Orange; E. John Radu, Fountain Valley; William J. Talbot, Jr., Corona Del Mar, and Norman Feldman, Huntington Beach, all of Calif., assignors to Santa Fe International Corporation, Orange, Calif.

Continuation-in-part of Ser. No. 903,181, May 5, 1978. This application May 2, 1979, Ser. No. 35,216
Int. Cl.[3] F16L *1/00;* B63B *35/04*
U.S. Cl. 405—168 56 Claims



1. A self propelled reel pipe laying ship having forward, midship and stern sections, comprising: a reel support structure extending from and above the main deck level of the ship in the midship section thereof, to a height sufficient to accommodate the largest permitted reel diameter, based on maximum pipe diameter and length to be carried by the ship; a pipe carrying reel rotably mounted to the reel support structure about a substantially horizontal rotational axis extending transversely across the ship; and pipe handling and conditioning means pivotably mounted to the stern section of the ship for conditioning pipe as it is unspooled from the reel and for guiding the conditioned pipe into the water during a pipe laying operation, said pipe conditioning means including:

(a) radius control means for imparting a substantially uniform radius of curvature to substantially the entire length of pipe being unspooled,

(b) straightener means located downstream of the radius control means in the direction of unspooling for exerting a reverse bending force on the pipe from the bending force exerted by the radius controller,

(c) tensioner means located downstream of the straightener means in the direction of unspooling to exert a desired tension on the pipe during a lay operation, and

(d) level wind means for moving said radius controller, straightener and tensioning means transversely across the ship in a direction substantially parallel to the rotational axis of the reel; and

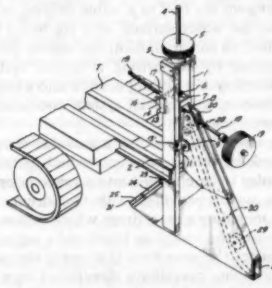
means for pivoting said pipe conditioning means about a pivot axis extending substantially transverse of the ship and substantially parallel to the rotational axis of the reel to permit adjustment of the pipe entry angle into the water.

4,269,541

IMPLEMENT FOR THE LAYING OF CABLES AND THE LIKE

Marcel Altmann, Rte. de 10. Septembre, 22, Luxembourg, Luxembourg

Continuation-in-part of Ser. No. 827,676, Aug. 25, 1977, abandoned. This application Oct. 26, 1978, Ser. No. 955,144
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1976, 2639014
Int. Cl.[3] F16L *1/02*
U.S. Cl. 405—181 7 Claims



1. Line-laying apparatus for a tractor comprising:

a frame rigidly connectible to the tractor, said frame including horizontally spaced upright ways and a crossbar bridging between said ways;

a trench cutter including a generally upright leading cutting edge and a passage for supplying line generally to the bottom of said trench cutter;

a slide fitted between said ways below said crossbar and carrying said trench cutter;

means guiding said slide for elevational movement along said ways for elevational adjustment of said trench cutter relative to said frame;

a rod extending through said crossbar and carrying said slide;

means for moving said rod generally axially, elevationally relative to said crossbar, for adjusting the elevation of said trench cutter relative to said frame while maintaining said trench cutter leading cutting edge at a substantially constant angle of inclination;

means pivotally connecting said trench cutter to said slide; and

means for swinging said trench cutter relative to said slide about a generally horizontal axis extending laterally of

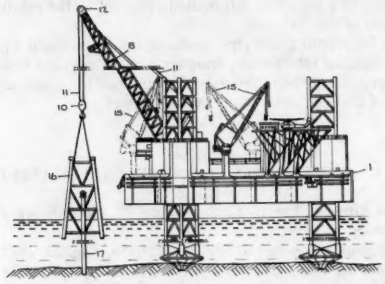
said trench cutter while maintaining said frame stationary relative to the tractor to adjust the angle of inclination of the trench cutter leading cutting edge.

4,269,542

JACK-UP RIG FOR MARINE DRILLING

Sergio R. C. Mueller, Rio de Janeiro, Brazil, assignor to Petroleo Brasileiro S.A. - Petrobras, Rio de Janeiro, Brazil

Filed Jun. 18, 1979, Ser. No. 49,297
Claims priority, application Brazil, Jul. 19, 1978, 7804645
Int. Cl.[3] E02B *17/00*; B63B *35/00*
U.S. Cl. 405—196 **3 Claims**



1. A mobile jack-up rig, for marine drilling, of the self-elevating type having a floatable hull, legs which can be propelled from transport positions projecting above the hull downwardly to engage the bottom of the sea to serve as bases for use in jacking-up the hull to a stable drilling position substantially above the water surface, said rig being fitted with conventional devices and equipment for marine drilling of oil wells characterized by comprising a special system which allows the conversion of a drilling derrick into a high capacity crane and vice-versa, said special system comprising the following members:

(a) a drilling derrick attached to a movable structure on a drilling deck by means of pivots which permit it to be tilted in order to be changed into a crane boom;

(b) a drilling winch provided with two drums which act separately including a main drum which actuates the wire lines that move the travelling block and a secondary drum which actuates the wire lines that move the parts which perform swabbing operations, directional logging, movement of parts along the well, etc.;

(c) a drilling deck mounted on a swivelling base capable of rotating 360° in any direction, said swivelling base also forming the rotating crane table when the assembly formed by the drilling derrick and the drilling deck is acting as a crane; and

(d) a movable substructure over which said swivelling base rests, said movable substructure being provided with a motor which transmits rotating motion to the swivelling base, this motor also being designed to drive the substructure on rails along the deck whenever it is necessary for the operation of the rig in the crane mode.

4,269,543

MOBILE, OFFSHORE, SELF-ELEVATING (JACK-UP) UNIT LEG/HULL RIGIDIFICATION SYSTEM

Jerome L. Goldman; John O. 'R. Breeden, and Walter H. Michel, all of New Orleans, La., assignors to Freiede & Goldman, Ltd., New Orleans, La.

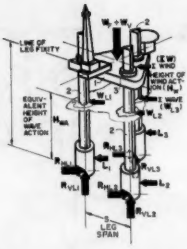
Filed Aug. 29, 1979, Ser. No. 70,672
Int. Cl.[3] E21B *7/12*
U.S. Cl. 405—198 **15 Claims**

1. A jack-up rig unit for offshore use, comprising:

at least one leg with a set of rack teeth fixedly connected thereto and disposed at least generally in a vertical direction along at least a substantial portion of the leg length;

a floatable hull supportable above the water line on said leg(s);

rack chock mans carried by said hull for each of said leg(s) for rigidly locking the leg(s) to said hull for rigidification of the hull and leg(s) together without introducing any



substantial bending moments in the leg(s), said rack chock means including as a part thereof laterally movable teeth engaging means for rigidly interdigitating with in locking, mating engagement the rack teeth of its respective leg in it rigidification disposition but laterally movable with respect to said rack teeth out of any engagement with said rack teeth when it is desired to jack said leg(s) up and down.

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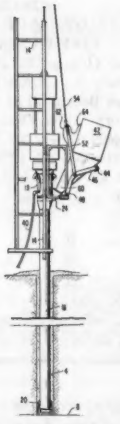
IN SITU PILE FORMING APPARATUS

Fredric Rusche, 30303 Beck Rd., Wixom, Mich. 48096

Continuation of Ser. No. 915,456, Jun. 14, 1978, abandoned, which is a division of Ser. No. 832,947, Sep. 13, 1977, Pat. No. 4,158,518. This application Jan. 30, 1980, Ser. No. 116,995
Int. Cl.[3] E02D *5/34*
U.S. Cl. 405—239 **2 Claims**



1. Apparatus for in situ formation of a pile in a hole comprising

a pile-driving rig having leads,

a hollow mandrel having a hopper on the upper end thereof, said hopper having an upwardly open mouth on one side thereof,

means for driving said mandrel into the ground,

a skip assembly for pouring material into the open mouth, said assembly comprising

a frame vertically movable on said leads,
a bucket having a pouring spout on one side thereof,
means pivotally mounting said bucket on said frame for swinging movement between a loading position in which the bucket is disposed generally outward away from the frame, and the chute is generally upwardly directed and a pouring position in which the bucket is disposed relatively inward toward the frame and the chute is directed generally downwardly,
a hoist attached to the skip assembly for applying an upward lifting force thereto characterized in that during the free upward movement of said frame on the leads in response to said lifting force, said bucket maintains its loading position,
a downwardly facing hook on the underside of the hopper mouth and bar means on the frame for engaging in said hook whereby to block the free upward movement of said frame on said leads when said frame reaches a predetermined elevation with respect to the mouth on the hopper, whereby further lifting force applied to the skip assembly tips the bucket upwardly to its pouring position,
means for inserting reinforcing steel into the hole via the mandrel, comprising an access opening in the upper end of said hopper,
a door for closing said access opening,
a door for closing the upwardly open mouth, and
power means for closing said doors.

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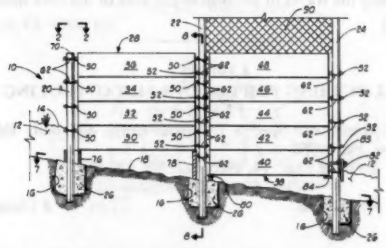
RETAINING WALL STRUCTURE AND METHOD OF CONSTRUCTING SAME

William C. Finney, 1616 Walnut Cove Rd., Edmond, Okla. 73034

Filed Jul. 18, 1979, Ser. No. 58,517
Int. Cl.³ E02D *5/06*
U.S. Cl. 405—285 **15 Claims**



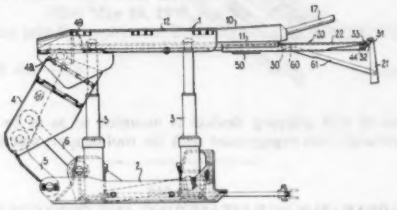
1. A wall structure comprising:
first and second spaced post members;
a plurality of beams stacked one upon the other to form a wall, a first one of said plurality of beams being further characterized as a first preformed concrete beam having reinforcing means disposed therein with first and second reinforcing means portions extending from first and second ends of said first beam, said first beam being located between said first and second post members with said first and second exposed reinforcing means portions engaging said first and second post members, respectively; and
a first guide means for restricting lateral movement of said first beam relative to said first post member when said guide means is placed over an upper end of said first post member and for thereby guiding said first end of said first beam into place as said first beam is lowered relative to said first post member.

4,269,546

MINE WORKING APPARATUS

Graham J. Saunders, Newcastle on Tyne, Great Britain, assignor to Huwood Limited, Tyne and Wear, England

Filed Jun. 4, 1979, Ser. No. 31,226
Claims priority, application United Kingdom, Apr. 20, 1978, 15637/78
Int. Cl.³ E21D *17/05*
U.S. Cl. 405—294 **8 Claims**



1. Mine working apparatus provided with a sprag plate by which an upright wall adjacent, and forwardly of, the apparatus can be supported, in which the sprag plate is pivotally mounted on the forward end of a support, the support is carried by a part of the apparatus relatively to which it is reciprocable in the fore-and-aft direction, actuating means is provided to effect reciprocation of the support and is such that forward movement of the actuating means effects, except for a range of such movement when the actuating means moves relatively to the support, forward movement of the support and rearward movement of the actuating means effects, except for a range of such movement when the actuating means moves relatively to the support, rearward movement of the support, and a link is pivotally connected at spaced locations to the actuating means and to the sprag plate and is such that when the actuating means is at the forward end of the range in which it can move forwards relatively to the support, the link holds the sprag plate in an upright, wall-supporting position and when the actuating means is at the rearward end of the range in which it can move rearwardly relatively to the support, the link holds the sprag plate in a retracted position.

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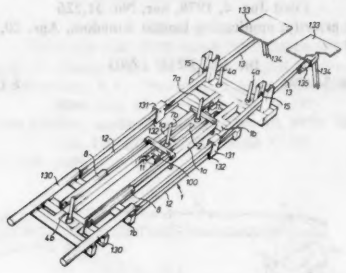
TUNNEL ROOF SUPPORTING APPARATUS

John D. Harding, 8 Field Close, Gedling, England

Filed May 21, 1979, Ser. No. 41,401
Claims priority, application United Kingdom, May 25, 1978, 22588/78
Int. Cl.³ E21D *15/582, 15/58*
U.S. Cl. 405—303 **18 Claims**

1. Self-advancing roof-supporting apparatus for providing temporary support of a portion of the roof of a tunnel having spaced roof-support members therein, comprising a main frame; and means engageable with the roof-support members for suspending the apparatus therefrom, said means comprising at least one fixed gripping device and at least one movable gripping device slidable longitudinally of said frame, said grip-

ping devices being arranged to selectively grip the roof-support members and at least one vertical hydraulic ram on which



one of said gripping devices is mounted so as to be urged upwardly into engagement with the roof-support members.

4,269,548

APPARATUS FOR MEASURING AND CONTROLLING FLOW OF PULVERULENT MATERIAL

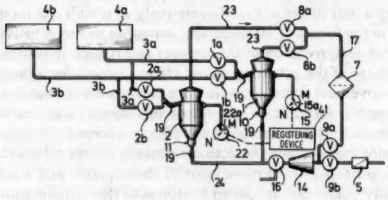
Andreas von Bennigsen-Mackiewicz, and Christoph von Bennigsen-Mackiewicz, both of 3211 Banteln, Hannover, Fed. Rep. of Germany

Filed Jan. 25, 1979, Ser. No. 6,346

Claims priority, application Fed. Rep. of Germany, May 16, 1978, 2821372

Int. Cl.³ B65G *53/66*

U.S. Cl. 406—25 **10 Claims**



1. A transportable device for delivering measured amounts of finegrained bulk material comprising: at least one portable silo container, a plurality of measuring containers, pneumatic charge and discharge means connected to each said measuring container, a supply line pneumatically connecting said silo container to each of said measuring containers, first valve means in said supply line for selectively communicating said measuring containers with said silo container for charging said measuring containers with bulk material, a blower having a suction side connected to each measuring container for pneumatically drawing said bulk material thereto through said supply line, each discharge means including an extraction nozzle having an extraction line connected to the pressure side of said blower and a bypass line with a control valve leading from the pressure side of the blower into the interior of the measuring container for creating interior pressure in said measuring container after filling thereof, second valve means interconnected between said blower suction side and said measuring containers for regulating the suction in each measuring container, said blower further having a pressure side connected to said discharge means of each measuring container, an air-permeable membrane disposed in said extraction nozzle downstream of the connection with said pressure side of said blower, third valve means interconnected between said pressure side and said blower and each said discharge means for regulating the discharge of said measuring containers, a scale connected to each measuring container for measuring the weight of the material therein, a control means connected to each scale for monitoring the measurements thereof, said control means having an adjustable zero weight threshhold and an adjustable maximum weight threshhold, said adjustable zero threshhold triggering charging of a respective measuring container when attained and said adjustable maximum threshhold triggering discharge of a respective measuring container when attained, said control means connected to each of said first, second and third valve means for cooperatively coordinating operation thereof whereby charging of one of said measuring containers takes place only simultaneously with discharge of another of said measuring containers.

4,269,549

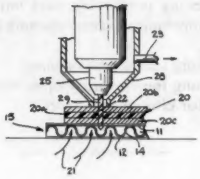
METHOD FOR DRILLING CIRCUIT BOARDS

James P. Block, Long Beach, Calif., assignor to LCOA Laminating Company of America, Garden Grove, Calif.

Filed Jul. 30, 1979, Ser. No. 61,592

Int. Cl.³ B23B *35/00*

U.S. Cl. 408—1 R **7 Claims**



1. A method for drilling a printed circuit board comprising

placing beneath the circuit board, backup material comprising an open core member having at least one sheet attached to one side of said core member, the core member forming elongated channels running between opposite edges of said sheet, and

drilling through the printed circuit board and said one sheet of said backup board,

after drilling through said one sheet of said backup board ending the travel of the drill in the area of the core member.

4,269,550

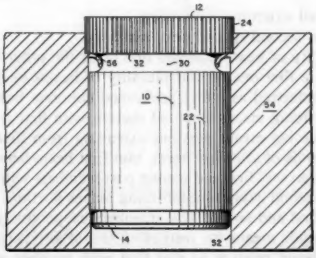
DRILL BUSHING FOR USE IN A METAL TOOLING PLATE

Mario DiGiulio, c/o Spectra Industries Corp., 405 Baily Rd., Yeadon, Pa. 19050

Filed Mar. 14, 1980, Ser. No. 130,519

Int. Cl.³ B23B *49/02*

U.S. Cl. 408—241 B **8 Claims**



1. A drill bushing for use in a metal tooling plate comprising a unitary body of hardened metal having an external shape generally in the form of a cylinder with opposite end faces and

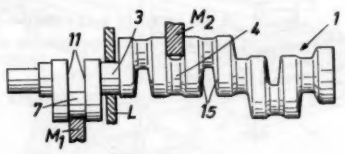
a circular cylindrical internal drill guiding passage open at both ends and extending substantially from one end face to the other, said bushing having: a circular cylindrical external surface coaxial with the guiding passage and extending from a first location adjacent one end face to a second location between the mid-point of the bushing and the other end face; a knurled cylindrical external surface coaxial with the guiding passage and extending from a third location adjacent said other end face to a fourth location between said second and third locations, the knurled surface having teeth extending parallel to the axis of said circular cylindrical external surface and said teeth having roots substantially aligned with said circular cylindrical external surface and tips extending outwardly beyond said circular cylindrical external surface; an annular groove in the external surface of the bushing, said groove being located between said second and fourth locations and immediately adjacent said fourth location; the teeth of the knurled section having radially extending end faces at said fourth location forming an angle between about zero degrees and five degrees positive with respect to a plane perpendicular to said cylindrical external surface whereby said teeth are able to cut into the internal surface of a cylindrical hole in the tooling plate, forming chips which are received in said groove when the bushing is pressed into the tooling plate.

4,269,551

METHOD OF MACHINING CRANKSHAFTS

Bruno Kralowetz, St. Ulrich 142, A-4400 Steyr, Austria

Filed Apr. 6, 1979, Ser. No. 27,856
Claims priority, application Austria, Apr. 18, 1978, 2712/78
Int. Cl.[3] B23C *3/06*
U.S. Cl. 409—132 **2 Claims**



1. A method of machining a crankshaft having two ends at cylindrical portions consisting of mainshaft portions and crankpins and at crankweb side faces adjoining the cylindrical portions in a sequence of steps proceeding from one end of the crankshaft to the other end thereof, each of said steps comprising

(a) supporting the crankshaft at a mainshaft portion,

(b) engaging a first cutter for completely machining a crankpin and the crankweb side faces adjoining the crankpin lying on one side of and adjacent said support while simultaneously engaging a second cutter for machining crankweb side faces adjoining a mainshaft portion on the other side of and closest to said support,

(c) withdrawing the first cutter, and

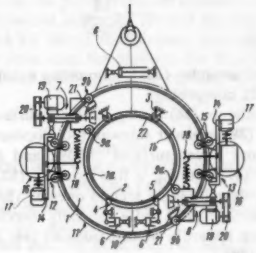
(d) continuing the engagement of the second cutter for completely machining the crankweb side faces adjoining the mainshaft portion on the other side of said support.

4,269,552

APPARATUS FOR REMOVING A WELDING BULGE FROM RESISTANCE WELDED PIPES

Mikhail R. Unigovsky, ulitsa Pushkinskaya, 21, kv. 31; Evgeny V. Rulevsky, ulitsa Vyshgorodskaya, 30, kv. 64, both of Kiev; Georgy A. Arendt, 9 Parkovaya ulitsa, 6, korpus 1, kv. 36, Moscow; Vladimir G. Chirskov, ulitsa Saltykova-Schedrina, 34, kv. 5, Tjumen; Julian K. Konovalov, ulitsa Sholom-Aleikhema, 1, kv. 5, Kiev; Vasily T. Ivanov, ulitsa Shevchenko, 5, kv. 4, Borispol Kievskoi oblasti; Isaak Y. Nemirovsky, ulitsa Kopylovskaya, 21, kv. 67, Kiev; Sergei I. Kuchuk-Yatsenko, ulitsa Filatova 1/22, kv. 47, Kiev; Vasily A. Sakharnov, ulitsa Solomenskaya, 41, kv. 93, Kiev, and Alexandr B. Kheinis, ulitsa Frunz, 131, kv. 82, Kiev, all of U.S.S.R.

Filed May 10, 1979, Ser. No. 37,495
Claims priority, application U.S.S.R., May 22, 1978, 2621708
Int. Cl.[3] B23C *3/12*
U.S. Cl. 409—140 **1 Claim**



1. An apparatus for removing a welding bulge from resistance or the like welded pipes, which comprises:

a split ring-shaped carrier having two articulated half sections, adapted to be placed about the bulge zone in spaced circumferential relationship to said resistance welded pipes and having a circumferential guideway and gear rim adjacent the outer periphery of said carrier and extending the length thereof, at least two cams disposed on said carrier in diametrically opposing relationship, and centering rollers disposed on said carrier and in contact with said pipes for supporting said carrier;

clamping means mounted on said carrier for fixing the carrier on said resistance welded pipes;

at least two motor-operated carriages, each including support rollers to carry a said carriage and a driving gear wheel brought respectively into engagement with the gear rim of said carrier for moving said carriages along said circumferential guideway;

a milling cutter unit, comprising a milling head and a cutter, on each of said carriages adapted to be moved to and from the welding bulge; and

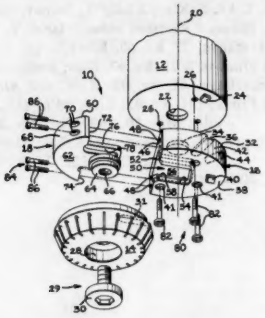
former rollers located in diametrically opposite positions and being rigidly connected to a milling head with a cutter to lead the cutter in paths following the profile of the resistance welded pipes, and at the beginning and the end of motion cams attached to said carrier are used to shift said former rollers farther from the center of rotation about said pipes and thus drive said milling cutters from the pipe's surface, thereby terminating the removal of the welding bulge.

4,269,553

ARBOR ASSEMBLY

James W. Drazy, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 11, 1980, Ser. No. 138,021
Int. Cl.[3] B23C 5/26
U.S. Cl. 409—232 2 Claims



1. An arbor assembly (10) for mounting a cutting tool (14) to a spindle (12), comprising:

a spindle adapter (16) having an upper surface (32), a lower surface (38), a planar sidewall (46) disposed between said upper and lower surfaces (32,38), and a stepped wall portion (50) defining a first opening (52) adjacent said planar sidewall (46), a second opening (54) adjacent said lower surface (38), and a centrally disposed cavity (56) extending inwardly of said sidewall (46) and said lower surface (38);

a cutting tool adapter (18) having an upper surface (60), a lower surface (62), a pair of planar sidewalls (72,74) disposed between the upper and lower surfaces (60,62), and a stepped wall portion (76) extending outwardly of said pair of sidewalls (72,74) and of said lower surface (62), and being of a construction sufficient for alignably mating with the cavity (56) defined by the stepped wall portion (50) of the spindle adapter (16);

means (80) for mounting the spindle adapter (16) to the spindle (12);

means (84) for mounting said cutting tool adapter (18) to said spindle (16) and maintaining the planar sidewall (46) of the spindle adapter (16) in an abutting relationship with the pair of planar sidewalls (72,74) of the cutting tool adapter (18), and

means (29) for mounting the cutting tool (14) to said arbor assembly (10).

4,269,554

WELL PIPE HANDLING EQUIPMENT

Lewis B. Jackson, 45 Scenic Cir., Croton-On-Hudson, N.Y. 10520

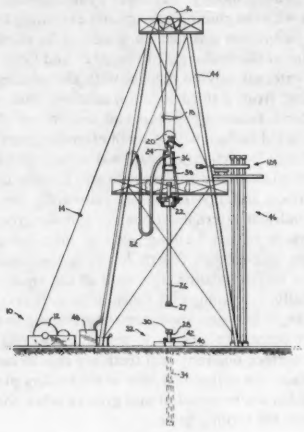
Filed Aug. 14, 1979, Ser. No. 66,413
Int. Cl.[3] G01L 1/02
U.S. Cl. 414—22 16 Claims

1. A well pipe elevator for raising and lowering pipe sections, comprising:

(a) a plurality of pipe encompassing body sections pivotally joined to swing between opened and closed positions;

(b) power actuated means carried by said body sections for swinging said body sections between open and closed positions; and

(c) automatic means associated with said body sections and responsive to a pipe section being in a selected position adjacent said body sections for automatically operating said power actuated means to close said body sections so



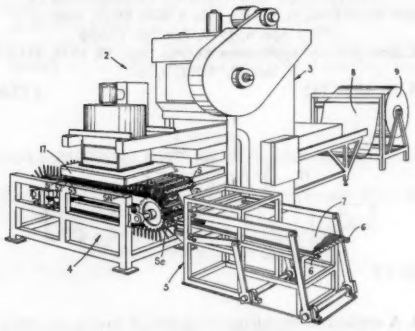
as to encompass and hold said pipe section within said body sections.

4,269,555

DEVICE FOR DISCHARGING STACKED FINS FROM A TRANSPORTER

Lawrence A. Franks, Sturgis, Mich., assignor to Burr Oak Tool & Gauge Company, Sturgis, Mich.

Division of Ser. No. 905,022, May 11, 1978, Pat. No. 4,195,540.
This application Sep. 24, 1979, Ser. No. 78,523
Int. Cl.[3] B65H 31/06, 31/30
U.S. Cl. 414—27 9 Claims



1. In an apparatus for handling stacks of platelike fins, said apparatus including fin transporting means movable in a selected direction and having a plurality of fin supporting means mounted thereon and projecting outwardly therefrom for supporting stacks of platelike fins, said plurality of fin supporting means being spaced a predetermined distance apart along the direction of movement of said transporting means, chute means positioned adjacent said transporting means at a selected location and projecting outwardly away from said transporting means substantially perpendicular to the direction of movement thereof at said location, said chute means being adapted to have stacks of said fins positioned thereon and slidably moved therealong, an intermittently-actuated drive for causing said transporting means to be intermittently advanced in a steplike manner so that the adjacent fin supporting means are intermittently and sequentially advanced into said selected

location, and a discharge device positioned at said selected location and cooperating between said transporting means and said chute means for sequentially and intermittently moving the stacks of fins from said transporting means onto said chute means, said discharge device comprising:

stationary frame means;

first rake means supported on said frame means for movement between first and second positions, said first rake means being slidably supported on said frame means for linear reciprocating movement between said first and second positions in a direction substantially parallel with the lengthwise direction of said chute means, said first rake means when in said first position projecting between adjacent supporting means and being disposed to engage the bottom of the stack of fins which is mounted on said transporting means and disposed at said selected location, said first rake means being movable from said first position outwardly away from said transporting means into said second position for causing the stack of fins to be removed from said transporting means and deposited on said chute means;

second rake means movably supported on said frame means for slidably advancing the stack of fins along said chute means from said second position into a third position;

motion control means coacting with said second rake means for causing same to be cyclically moved along an elongated loop-like path, a part of said path as it extends from said second position to said third position being straight and extending substantially parallel with the lengthwise direction of said chute means, said path also including a transversely projecting portion whereby said second rake means is displaced transversely when it is returned from said third position toward said second position so as to pass around the stack of fins being moved into said second position by said first rake means; and

drive means drivingly interconnected to said first and second rake means for causing synchronous cyclic movement thereof so that said first rake means is moved from said first position into said second position simultaneous with the return movement of said second rake means from said third position into said second position.

4,269,556

STACK CHANGING APPARATUS

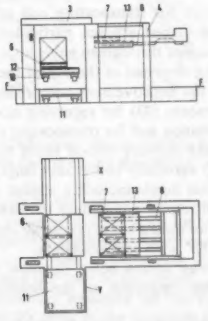
Norbert Martini, Erkrath, Fed. Rep. of Germany, assignor to Jagenberg Werke Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 22, 1978, Ser. No. 972,304

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1977, 2758291

Int. Cl.[3] **B65H** *31/32, 31/10*

U.S. Cl. 414—50 **1 Claim**



1. In a stack changing apparatus for sheet ejecting machines having a drop table vertically movable within a first frame structure defining a stacking position, the drop table having a pallet to be placed thereon for receiving stacks, and a second vertical frame structure provided behind the first vertical frame structure in the direction of flow of the sheets and having a carriage which is movable vertically and parallel to the drop table and provided with pallet transport elements, is also horizontally movable between the second and the first frame structure, the improvement wherein one of two stacking platforms is alternatively used as the drop table, the first frame structure has means disposed on the sides of the stacking position perpendicular to the direction of sheet flow for movably receiving the stacking platforms, the platforms being selectively movable transversely to one of the two sides of the first vertical frame structure and their stacking surface being below the level of the floor, the apparatus being further provided with an auxiliary skid for each stacking platform, in claim **1**, line **20** the auxiliary skid resting on top of the platform and the pallet resting on top of the auxiliary skid, the height of the stacking platform being such that when an auxiliary skid is placed on top of the stacking platform the top of the skid is substantially level with the floor, each auxiliary skid having take-up elements for engagement by the pallet transport elements and wherein the pallet transport elements are mounted to be lowered down to below the level of the floor to engage an auxiliary skid for lifting the auxiliary skid and the pallet resting thereon from atop the platform for movement of the skid and the pallet to the stacking position to effect stack changing.

4,269,557

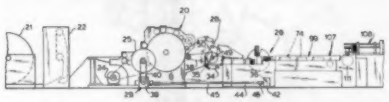
AUTOMATIC BAG COLLATING AND STACKING APPARATUS

Arthur H. Kidd, Menomonee Falls, Wis., assignor to H. G. Weber & Co., Inc., Kiel, Wis.

Filed Jun. 28, 1979, Ser. No. 53,027

Int. Cl.[3] **B65G** *57/28;* **B65H** *31/06*

U.S. Cl. 414—105 **21 Claims**



1. An automatic bag stacking and collating apparatus for use with a high capacity bag manufacturing machine, which is powered by a suitable drive means and which bag machine produces bags with closed bottom ends said apparatus comprising:

a frame having a receiving end portion, a transfer surface, and an unloading end portion,

a plurality of bag handling functional devices including:

a receiving means positioned adjacent to said bag machine and arranged to receive flattened bags from said bag machine,

a collection means carried on said frame at said receiving end portion and arranged to separate predetermined quantities of bags received from said receiving means into groups and to periodically deposit

a collected group on said transfer surface in a flat orientation with side edges of said bags aligned to form a vertically aligned stack,

a pair of laterally spaced turnover devices positioned downstream and laterally outward of said collection means for overturning said vertically aligned stacks of bags, a transfer swing means movable along said transfer surface to load said flat oriented and vertically aligned stacks of bags deposited on said transfer surface into the pair of turnover devices in an alternating sequence with said bag closed bottom ends positioned in opposing orientation relative to one another,

a conveyor means positioned between said pair of turnover devices and arranged to advance said overturned

stacks of bags to said unloading end portion in spaced aligned orientation,

means to transfer said overturned stacks of bags alternately from said pair of turnover devices and onto said conveyor means,

means for transferring said stacks of bags from said conveyor means and into a wrapping machine,

a drive arrangement for said bag stacking and collating apparatus arranged to synchronously drive each of the plurality of bag handling functional devices whereby individual bags are received from the bag machine and are automatically collected in stacks of a given quantity, said stacks are repositioned to place their closed bottom ends in opposing orientation relative to one another and are overturned and arranged in an aligned and spaced orientation for conveying down stream for assembling a plurality of stacks into bundles of a generally uniform thickness to facilitate wrapping and storage.

4,269,558

APPARATUS FOR INTRODUCING A FUEL ELEMENT INTO A FUEL ASSEMBLY OF A NUCLEAR REACTOR

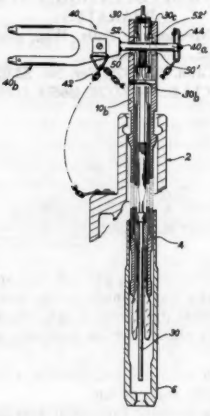
Louis Coppa, Boulogne, and Jacques Levy, Paris, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 30, 1979, Ser. No. 62,011

Claims priority, application France, Aug. 8, 1978, 78 23375

Int. Cl.[3] G21C *19/00*

U.S. Cl. 414—146 **5 Claims**



1. An apparatus for introducing a fuel element into a fuel assembly constituted by a plurality of vertical fuel elements and a structure for fixing said fuel elements, whereby the fuel elements have a positioning given by the fuel assembly, wherein it comprises:

an introduction plate which can be fixed to the upper face of the said fuel assembly and provided with a plurality of orifices able to permit the passage of a fuel element, said orifices producing the positioning of the fuel elements in the fuel assembly;

a tool for gripping a fuel element and for the introduction thereof into a fuel assembly;

lifting means able to give the tool horizontal displacements between a storage rack for the fuel elements and one of the positions vertical with respect to the orifices of the introduction plate;

the said tool comprising;

an outer tubular casing having at its lower end a bearing surface which can bear on the introduction plate, the bearing surface being provided with an axial bore and an abutment provided at the upper end thereof;

a system of jaws forming a clamp fixed to the lower end of a first control tube and able to slide in the casing;

means for controlling the opening and closing of said jaws;

a weight fixed to the first tube and able to slide in the casing and whose upper end constitutes an abutment able to cooperate with the upper abutment of the casing;

a supporting member fixed to the end of the first tube and which can be fixed to the lifting means;

a bar which can freely slide within the first tube between a first upper position and a second lower position, the upper end of said bar projecting beyond the supporting member to constitute a position indicator of the fuel element during the different operations, the lower end of the bar being able to pass through the orifice of the lower bearing surface of the casing;

first detachable means for linking in vertical translation the said bar and the said control means of the first tube; and

second detachable means for linking in vertical translation said control means and the said casing.

4,269,559

APPARATUS FOR DISCHARGING CONTAINERS (TRAYS) FILLED WITH CIGARETTES AND THE LIKE

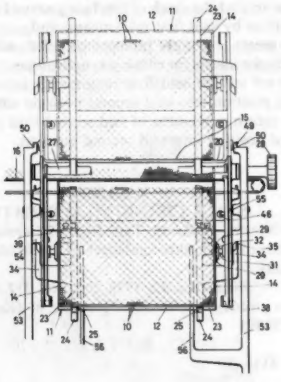
Heinz H. Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co., Verden, Fed. Rep. of Germany

Filed May 31, 1979, Ser. No. 44,131

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1978, 2824149

Int. Cl.[3] B65G *59/08*

U.S. Cl. 414—414 **15 Claims**



1. In a device for transporting and emptying a container containing rod-shaped articles, particularly cigarettes, by rotating the container through an angle approximating 180° such that an opening disposed at the top of the container is turned downwardly, the improvement comprising;

(a) carrier means (**23**) for receiving said containers from a delivery station and for transporting them to an emptying station, said delivery station being located in a transport plane (**22**) vertically below said emptying station (**16**),

(b) said carrier means including angled arms (**24**) for receiving the bottom of a container thereon,

(c) said carrier means being pivotable about an angle approximating 180° with said container,

(d) said carrier means being operable to return said container, after emptying, to the position in which it was received,

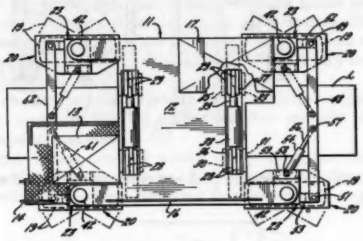
(e) said carrier means being retractable, in a direction opposite from the delivery direction, after returning said container to said received position, whereby the container is removed from said carrier means.

4,269,560

STEERING ASSEMBLY

Dennis R. Thomas, Brimfield, Ill., assignor to Kress Corporation, Brimfield, Ill.

Filed Oct. 1, 1979, Ser. No. 80,537
Int. Cl.[3] B62D *5/06*
U.S. Cl. 414—459 **11 Claims**



1. A steering assembly for a wheeled vehicle having a frame and comprising:

two wheel carrying members, each having a wheel mounted thereon for rotation about a first axis and each being received by the vehicle frame for limited rotation relative thereto about a second axis;

a steering cross bar pivotally attached to each of the wheel carrying members, each attachment point being spaced apart from the second axis of rotation; and

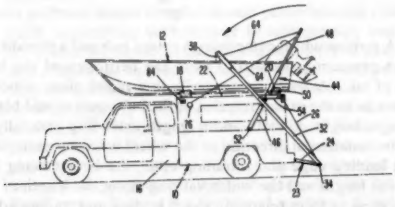
means, pivotally attached to the steering cross bar at a first point and to one of the wheel carrying members at a second point, for increasing and decreasing the distance between said first and second points, whereby the wheel carrying members are rotated and the wheels turned for steering.

4,269,561

APPARATUS FOR LOADING AND UNLOADING OBJECTS RELATIVE TO A CARRIER VEHICLE

Paul J. Rutten, 1818 13th St., South, Great Falls, Mont. 59405

Filed Apr. 5, 1979, Ser. No. 27,399
Int. Cl.[3] B60R *9/00*
U.S. Cl. 414—462 **12 Claims**



1. Apparatus for loading an object onto a carrier vehicle having support means for receiving the object, said apparatus comprising:

lift means connectible to the carrier vehicle and including a pair of lift arms mounted at inner ends for vertical swinging movement about a horizontal rotary axis,

connector means connectible to outer ends of said lift arms for connecting said lift arms to the object,

a power winch assembly mounted on the carrier vehicle remotely of said lift arms in the direction toward which the object is to be loaded and including cable means connected to said lift arms for swinging the latter about said rotary axis,

cable fulcrum means mounted on the carrier vehicle,

said cable means engaging said fulcrum means,

said fulcrum means being movable between a first position located to one side of said rotary axis toward the vehicle, and a second position located to the other side of said rotary axis away from the vehicle,

said power winch assembly being actuable during a loading mode:

in a first direction for winding-in said cable means to raise said lift arms and object and shift the center of gravity of the object toward the vehicle and past said rotary axis, with said fulcrum means located in said first position, whereupon further loading movement of said lift arm is prevented by said cable means, and thereafter

in a second direction for paying-out said cable means to allow the object to gravitate downwardly onto the support means of the carrier vehicle,

said power winch assembly being actuable during an unloading mode:

in said first direction for winding-in said cable means to raise the object from the support means and shift the center of gravity of the object away from the vehicle and past said rotary axis, with said fulcrum

means located in said second position, whereupon further unloading movement of said lift arms is prevented by said cable means, and thereafter

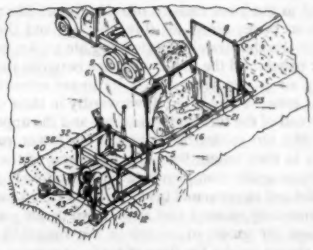
in said second direction for paying-out said cable means to allow the object to gravitate downwardly to an unloaded position.

4,269,562

TRENCH TRASH COMPACTOR

James B. Burgess, Drawer E, Divide, Colo. 80814

Filed Aug. 7, 1978, Ser. No. 931,473
Int. Cl.[3] B60P *1/00;* **B65B** *63/00*
U.S. Cl. 414—515 **1 Claim**



1. A refuse compactor for operation along the length of an earthen trench comprising:

a refuse receiving chamber having spaced apart parallel side walls, a floor and an openable top;

ram means slidably disposed in the receiving chamber longitudinally thereof and defining a movable end wall for the chamber and adapted to push refuse out of the receiving chamber;

drive means carried by the receiving chamber and operably connected to the ram means for providing relative movement between the ram means and the chamber;

a vertically disposed grate comprising a frame of parallel bars forming one end wall of the receiving chamber for movement between a raised open position and a lowered closed position and adapted to remain in the raised open position during operation of the ram means to push refuse out of the chamber and further adapted to remain in the closed position during withdrawal of the ram means into the receiving chamber; and

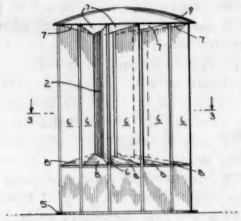
a plurality of guide wheels carried by the chamber and disposed exteriorly thereof for rotation so that their axes of rotation are substantially vertically perpendicular to the longitudinal axis of the chamber.

4,269,563

WIND TURBINE

Errol W. Sharak, 18775 W. Observatory Rd., New Berlin, Wis. 53151, and George E. Sharak, Sr., Milwaukee, Wis., assignors to Errol W. Sharak, New Berlin, Wis.

Filed Aug. 9, 1979, Ser. No. 65,343
Int. Cl.[3] F03D *3/04*
U.S. Cl. 415—2 R **3 Claims**



1. A wind turbine comprising a centrally located rotor having a plurality of circumferentially spaced collectors facing in the same direction, means securing their ends together to prevent air from flowing to the area inside the assembled collectors, closure plates disposed at opposite ends of the rotor preventing entry of air to the inside of the rotor through the respective ends of the rotor to prevent internal turbulence in the rotor, a centrally located shaft extending through the rotor, hub members receiving the shaft at opposite ends of the rotor for rotation therein by the rotor, and take off means disposed at one end of the shaft to take off the power developed by the rotation of the rotor and shaft and a plurality of circumferentially spaced longitudinally extending air guide panels disposed around the rotor but free thereof, the said air guide panels each extending outwardly from the rotor in a generally straight line and spaced from each other a greater distance at the outer ends compared to the inner ends to provide funnel-like passages to the rotor to better direct air flow thereto, and the upper air space between the straightly extending air guides being closed by upper panels and the lower air space between the straightly extending air guides being closed by lower extending panels, the upper panels being tilted downwardly in their extent from the outer end of the turbine to the rotor and the upper air space between the air guides being closed by lower panels tilted upwardly in their extent from the outer end of the turbine to the rotor generally complementary to the upper panels and each lower and upper panel being canted toward each other in a complementary manner and away from an air guide toward an adjacent air guide to complete the funnel-like passages between the air guides for flow of air from outside the turbine to the rotor for rotation of the latter.

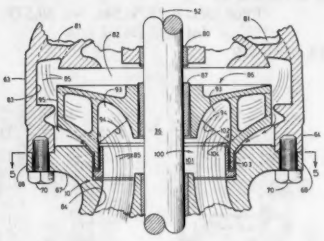
4,269,564

FLOW CONTROL DEVICE

Larry C. Naffziger, Fresno, Calif., assignor to Bank of America N.T. & S.A., Fresno, Calif.

Continuation-in-part of Ser. No. 947,610, Oct. 2, 1978, abandoned. This application May 16, 1979, Ser. No. 39,315
Int. Cl.[3] F04D *5/00*
U.S. Cl. 415—53 R **6 Claims**

1. A flow control device for a fluid pump having a throat and housing an impeller rotational about an axis of rotation to draw fluid through the throat and into the impeller and the impeller having a substantially cylindrical portion of predetermined length extending toward the throat substantially concentric to the axis of rotation, the flow control device comprising a substantially cylindrical wall borne by the pump extending inwardly of and substantially concentric to the cylindrical portion of the impeller at least one half the length of said cylindrical portion and spaced inwardly therefrom to form a path, for fluid recirculating about the cylindrical portion of the impeller, extending between the cylindrical wall of the flow control device and the cylindrical portion of the impeller to an annular discharge within the impeller disposed to release said



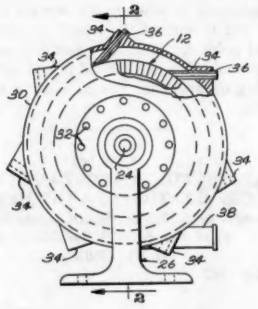
recirculating fluid along a path not converging on said axis of rotation.

4,269,565

TURBINE WHEEL

Roger D. Charles, 322 Olive Ave., Pt. St. Lucie, Fla. 33452; Earl Charles, Jr., 6311 Oleander Ave., Ft. Pierce, Fla. 33450, and Robert C. Stedman, 1756 Captains Pl., Sea Gate Harbor, Stuart, Fla. 33494

Filed Jul. 25, 1979, Ser. No. 60,684
Int. Cl.[3] F01D *1/34*; F03B *5/00*
U.S. Cl. 415—76 **10 Claims**



1. A turbine wheel comprising a rotary hub and a plurality of blades projecting outwardly from the periphery of the hub, each of said blades lying generally in a radial plane which is transverse to the axis of rotation of the hub, each of said blades having a height, a width and a length extending generally in the circumferential direction of the wheel whereby each blade has a leading edge and a trailing edge, the height being less than the length and the width varying along the length of the blade so as to form relatively sharp leading and trailing edges and an intermediate portion of greater thickness, the leading and trailing edges merging smoothly with said intermediate portion, said blades being arranged in a spaced-apart parallel relationship in a plurality of rows which extend parallel to the axis of the hub.

4,269,566

CENTRIFUGAL PUMP FOR ABRASIVE LIQUIDS

Walter L. Spruiell, P.O. Box 547, Iowa Park, Tex. 76367

Filed Sep. 13, 1978, Ser. No. 942,117
Int. Cl.[3] F04D *29/08*
U.S. Cl. 415—112 **2 Claims**

1. A liquid-sealed, tangentially-fed centrifugal pump comprising:

a rigid, generally cylindrical pump housing adapted to be coupled to a supporting structure;

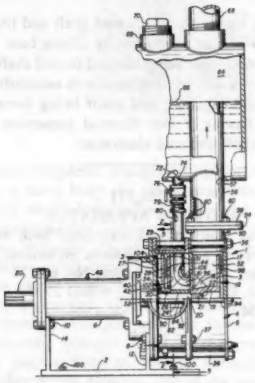
an internally-disposed generally coaxially aligned drive shaft adapted to be rotated by an external motor;

primary impeller means rotatably disposed within an internal primary impeller chamber within said housing and coupled to said drive shaft for rotation thereby for generating vacuum whereby to operate said pump;

sealing impeller means having a diameter substantially equal to the diameter of said primary impeller means and disposed within a separate spaced apart sealing chamber within said housing and driven by said shaft, said sealing impeller means spaced apart from said primary impeller means;

intermediate suction chamber means disposed within said housing between said sealing chamber and said primary impeller chamber;

divider means disposed within said housing between said suction chamber means and said primary impeller means, said divider means including first passageway means defined between it and said shaft to facilitate fluid flow communication between said suction and said primary impeller chambers;



partition disk means rigidly secured within said pump housing between said intermediate chamber and said sealing chamber;

inlet pathway means coupled to said pump housing substantially tangentially with respect to said primary impeller for delivering liquid to be pumped interiorly of said suction chamber at a point substantially between said primary impeller means and said sealing impeller means;

second passageway means defined between said shaft and said disk for facilitating passage of liquid between said intermediate chamber and said sealing chamber;

a plurality of vanes disposed at radially spaced-apart locations on the periphery of said sealing impeller for drawing liquid upwardly into the peripheral confines of said sealing chamber to create a seal; and,

output passageway means in fluid flow communication with said primary impeller chamber for outputting materials from said pump.

4,269,567

MUD DEGASSER PUMP

Victor Q. Phillips; Phil H. Griffin, and Martin J. Sharki, all of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 27, 1976, Ser. No. 754,857
Int. Cl.³ F04D *29/00*; F01D *53/04*
U.S. Cl. 415—168 **8 Claims**

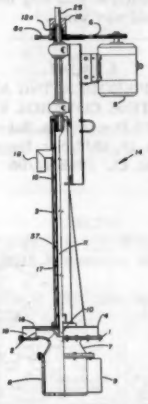
3. An enclosed pumping system for use in degasifying drilling fluids from a drilled borehole, said fluids having gases entrained therein, comprising:

an impeller having a central axial opening therethrough;

an impeller housing enclosing said impeller and having discharge outlet means;

inlet port means secured to said housing and communicating with said central axial opening of said impeller;

an elongated drive shaft attached to said impeller and having a longitudinal bore passage therethrough communicating wth said central axial opening of said impeller;



power means driveably connected to said drive shaft for applying rotational force to said shaft;

gas exhaust means on said drive shaft communicating with said longitudinal bore passage; and

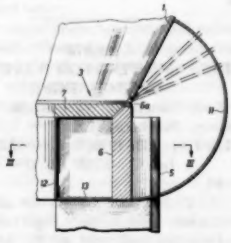
vacuum source means connected to said gas exhaust means for withdrawing some of said entrained gases through said central axial opening of said impeller, said longitudinal bore passage of said elongated drive shaft and said gas exhuast means.

4,269,568

STAY RING FOR THE SPIRAL CASING OF A ROTARY HYDRAULIC MACHINE

Erik O. Jansson; Bengt O. Naucler, and Thomas Asberg, all of Kristinehamn, Sweden, assignors to Aktiebolaget Karlstads Mekaniska Werkstad, Kristinehamn, Sweden

Continuation of Ser. No. 835,719, Sep. 22, 1977, abandoned. This application Oct. 22, 1979, Ser. No. 86,998
Claims priority, application Sweden, Sep. 28, 1976, 7610761
Int. Cl.³ F01D *25/24*
U.S. Cl. 415—204 **7 Claims**



1. A stay ring for a hydraulic machine having a spiral casing formed of metal plates, said stay ring comprising two cylindrical ring members disposed coaxially about the machine axis

and spaced apart along said axis to define a fluid flow path therebetween and a plurality of axially extending stay vanes made of metal plate, wherein each of the stay vanes intersects with each said ring member to lie radially on both sides of the ring member and extends axially at least substantially to the circular edge of the ring member axially remote from the other ring member, wherein axially extending welded cross-joints are formed where said stay vanes intersect with said ring members, and wherein the ends of the metal plates forming the spiral casing are welded to said cylindrical ring members along the axially remote circular edges such that stresses imparted to said casing are transmitted to said ring members and are not directly imparted to said stay vanes.

4,269,569

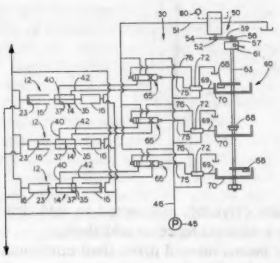
AUTOMATIC PUMP SEQUENCING AND FLOW RATE MODULATING CONTROL SYSTEM

Francis W. Hoover, 6105 Desert Hills, Bakersfield, Calif. 93309

Filed Jun. 18, 1979, Ser. No. 49,180

Int. Cl.³ F04B *41/06*

U.S. Cl. 417—5 **9 Claims**



1. A control system for automatically and continuously sequencing and modulating the output of pumping apparatus, for moving fluid under pressure at a predetermined flow rate, which apparatus includes a plurality of reciprocating pumps, fluid powered drivers connected to said pumps to drive said pumps, each said pump including valving devices for controlling the introduction of fluid to be moved to, and the ejection of fluid from said pumps, said power drivers each connected to an adjustable power source for delivering fluid to said power drivers for driving said power drivers at a predetermined rate, said control system comprising sensing means for sensing the flow rate of fluid discharged from said power drivers, movable switching means interposed between said power source and said power drivers for selectively directing fluid to each of said power drivers, means interconnecting said sensing means and each said switching means for sequentially operating said switching means in timed relation in response to fluid flow from said power source, thereby continuously and automatically sequencing each said pump in response to changes in said power source.

4,269,570

ELASTOMERIC MOUNTING FOR WAVE COMPRESSOR SUPERCHARGER

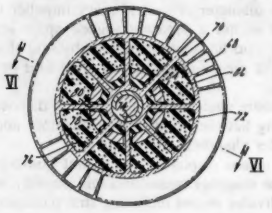
V. Durga N. Rao, Bloomfield Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 23, 1979, Ser. No. 32,198

Int. Cl.³ F04F *11/00*

U.S. Cl. 417—64 **4 Claims**

1. A rotor for a wave compressor for use in transferring energy from relatively high pressure, high temperature exhaust gases to low pressure, cool inlet air for an air-fuel mixture engine comprising a rotor adapted to be rotabaly mounted between an exhaust gas manifold having high pressure exhaust gas and low pressure exhaust gas outlet ports and an air intake manifold having a high pressure air outlet passage and a low pressure air inlet passage, said rotor comprising a hub and gas and air cells located radially outwardly with respect to the hub and defining axial gas and air flow passages, said hub having a cylindrical inner portion that forms a part of and is integral with the cell portion of the rotor, said rotor being formed of a ceramic material of relatively low thermal expansion, a metallic shaft extending through the hub inner portion sized to



produce a space located between said shaft and the inner portion of said hub and an elastomer of silicon base disposed in said space, said elastomer being bonded to said shaft and to said ceramic whereby a driving connection is established between said shaft and said ceramic, said rotor being formed of a ceramic material having a low thermal expansion coefficient relative to said shaft and said elastomer.

4,269,571

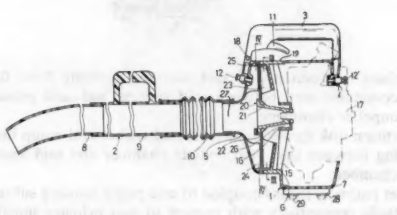
BLOWING APPARATUS

Michio Shikutani, and Satoshi Akiyama, both of Odawara, Japan, assignors to Kabushiki Kaisha Shikutani, Japan

Filed Aug. 14, 1979, Ser. No. 66,778

Int. Cl.³ F04B *39/12;* F04D *29/44*

U.S. Cl. 417—234 **7 Claims**



1. A blowing apparatus comprising a prime mover, a centrifugal fan having the rotor thereof coupled with a rotating shaft of the prime mover, a housing composed of front, mid and rear coverings, a blowing nozzle axially connected to the center of the front covering, a shoulder belt attached to the housing, the mid covering consisting of an outer cylindrical wall, an inner conical wall peripherally joined to the cylindrical wall, a plurality of radial stays inwardly extending from the cylindrical wall behind the conical wall, and a central ring peripherally joined to the inner ends of the radial stays, the prime mover having the casing thereof removably secured to the central ring, the rotor having a plurality of curved vanes provided thereon, the front covering being interiorly formed with a plurality of fixed vanes similar in number and shape to the vanes on the rotor, the rear covering being connected to the mid covering to surround the prime mover except the back side thereof, the front covering being air-tightly connected to the mid covering to define an annular space together with the conical and cylindrical walls, the space having an axial entrance defined by the inner periphery of the conical wall and an axial exit formed in the front covering, the rotor being so disposed in the space as to have a predetermined clearance

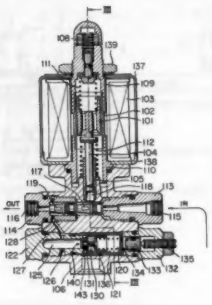
among the fixed vanes, the conical wall and the cylindrical wall.

4,269,572

ELECTROMAGNETIC PLUNGER PUMP

Katsumi Nozawa, and Hideo Nomura, both of Yokohama, Japan, assignors to Taisan Industrial Co., Ltd., Tokyo, Japan

Filed Apr. 16, 1979, Ser. No. 30,301
Int. Cl.³ F04B *49/00, 17/04*
U.S. Cl. 417—299 **4 Claims**



1. An electromagnetic plunger pump for delinering liquid comprising: a pump body, an electromagnetic coil, a plunger case arranged on the longitudinal axis of the electromagnetic coil, and electromagnetic plunger fitted in the plunger case for reciprocating motion by the alternating action of the magnetic attractive force produced by intermittent current flowing through the electromagnetic coil and the biasing force of springs, and a pressure adjusting mechanism comprising a pressure adjusting cylinder provided in the pump body, a pressure adjusting plunger fitted in the pressure adjusting cylinder for reciprocating motion and normally shutting off a passage leading to the delivery side of the pump from a pressure adjusting chamber which leads to a return opening of the pump body, wherein said pressure adjusting plunger is provided with a vent valve means which comprises a vent valve rod inserted in a through-hole of the pressure adjusting plunger so as to form an annular passage about the vent valve rod, a vent valve seat formed at the forward end of the pressure adjusting plunger, and a vent valve body integrally connected with said vent valve rod and concentrical therewith, said vent valve body being biased by a spring in the direction away from the vent valve seat so as to provide a clearance between the vent valve seat and the vent valve body, which allows air bubbles to pass therethrough and which substantially does not allow the liquid under pressure to pass therethrough.

4,269,573

PUMP DRIVE MECHANISM FOR AN EVAPORATIVE COOLER

Chester L. Goode, Coalinga, Calif., assignor to Milton Roy Company, St. Petersburg, Fla.

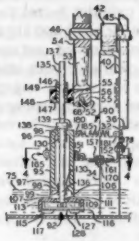
Filed Jul. 30, 1979, Ser. No. 61,993
Int. Cl.³ F04B *13/10, 35/00*
U.S. Cl. 417—362 **11 Claims**

1. In combination with an evaporative cooler having a blower, a pulley rotationally driving the blower, and a rotationally driven water pump, a drive mechanism for the pump comprising:

a drive shaft connected in rotational driving relation to the pump and extending therefrom adjacent to the pulley;

a wheel mounted on the shaft in rotational driving relation thereto and peripherally engaged in rotationally driven relation by the pulley; and

means for adjustment of the position of said pump and said wheel with respect to said pulley, comprising means for fixing said adjustment at a selected position, said means for



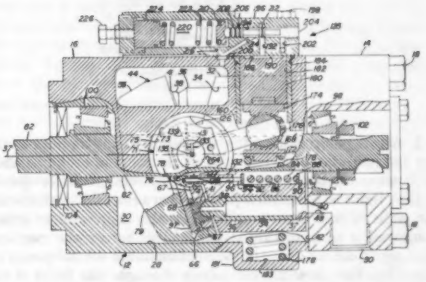
adjustment permitting adjustment of the wheel with respect to the pulley in two substantially orthogonal directions.

4,269,574

FLUID DEVICE

Wilfred S. Bobier, 4518 Brightmore, Bloomfield Hills, Mich. 48013

Filed Apr. 3, 1978, Ser. No. 892,735
Int. Cl.³ F01B *13/04*
U.S. Cl. 417—506 **15 Claims**



1. A fluid pressure energy translating device of the axial piston type, said device comprising:

a longitudinally disposed housing;

a longitudinally disposed cylinder barrel rotatably mounted within said housing, said cylinder barrel having a plurality of arcuately spaced cylinder bores and cylinder ports communicating each of said cylinder bores with one end of said cylinder barrel;

a plurality of pistons with inner ends disposed for reciprocal stroking movement within said cylinder bores, one end of each of said pistons projecting from the other end of said cylinder barrel bores;

a valve face having arcuate passages, said valve face and said one end of said cylinder barrel being disposed for relative rotary movement with said cylinder ports communicating successively with said arcuate passages in said valve face;

thrust plate means disposed adjacent said other end of said cylinder barrel and mounted in said housing for inclination about an axis at right angles to the longitudinal axis of said cylinder barrel;

spherical ball and socket joints between the projecting ends of said pistons and said thrust plate means to provide for reciprocation of said pistons in said cylinder bores relative to said cylinder barrel in response to the rotation of said cylinder barrel relative to said thrust plate;

means providing lateral support for said cylinder barrel, said lateral support means having a shaft which supports said barrel;

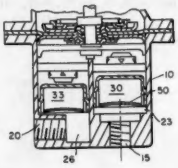
axially spaced bearing means carried by said housing, said bearing means supporting said shaft, said shaft having a coaxial, annular land intermediate said axially spaced bearing means, said land being slidingly engaged with said other end of said cylinder barrel to laterally support the barrel coaxially on the shaft and align said one end to float on a film of oil between said one end and said valve face having sufficient clearance with said barrel other end to provide a slidable and tiltable engagement therebetween said cylinder barrel having a splined section located axially inwardly of said cylinder barrel end; and said shaft having a mating splined section located axially inwardly of said land and engaging said cylinder barrel spline so as to transmit torque thereto and drive said cylinder barrel about said shaft axis and allow the barrel to move laterally when radial and tiltable motion occurs between the land and barrel.

4,269,575

AIR DOME WITH BAFFLE FOR FUEL PUMPS

Russell Parrent, Fairfield, Ill., assignor to United Industrial Syndicate, Inc., New York, N.Y.

Filed Apr. 17, 1979, Ser. No. 30,780
Int. Cl.³ F04B *11/00*
U.S. Cl. 417—542 **3 Claims**



1. A fuel pump comprising a housing having an inlet chamber and an outlet chamber with an air dome in each chamber; each air dome being provided with circumferentially spaced hollow flutes to effect flow passages between said air dome and the walls of the respective chamber, the improvement which comprises a non-perforated baffle disk across the entrance opening of the air dome in the inlet chamber whereby said air dome has fuel flow thereinto only through said flutes at the edge of said disk to trap air in said air dome and whereby washing out of air from said air dome is substantially prevented by said disk; wherein said fuel pump has a fuel inlet port effecting fuel flow directly towards the air dome opening in said inlet chamber.

4,269,576

VANE COMPRESSOR WITH RETICULATE OR POROUS SEPARATOR ELEMENT AND FLUID GUIDE MEANS THEREIN

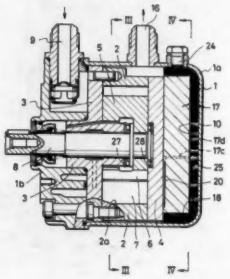
Tsunenori Shibuya, Konan, Japan, assignor to Diesel Kiki Co., Ltd., Saitama, Japan

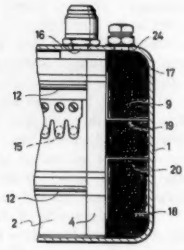
Filed Jun. 27, 1979, Ser. No. 52,344
Claims priority, application Japan, Jul. 29, 1978, 53-104580
Int. Cl.³ F04C *29/02*; B01D *39/04, 50/00*
U.S. Cl. 418—97 **5 Claims**

1. In a compressor for compressing a fluid comprising a refrigerant and an oil mixed therein, of the type including a horizontally disposed casing; a pump housing enclosed in said casing, the pump housing inlcuding first and second side walls and having an interior thereof formed as a peripheral cam surface; a rotor journalled in said pump housing and carrying a plurality of vanes radially movably inserted in a periphery thereof; drive shaft means secured to one end of said rotor; a discharge pressure chamber defined between said second side wall and an associated portion of said casing; pump outlet means formed in said pump housing in communication with said discharge pressure chamber; compressor outlet means formed in an upper portion of said casing in communcation with said discharge pressure chamber; oil charge and discharge port means formed in an upper portion of said casing facing said discharge pressure chamber; and oil separator means disposed within said discharge pressure chamber for separating oil from pressurized fluid delivered through said pump outlet means,

the improvement wherein said oil separator means comprises:

an element having a reticulate or spongy porous structure having pores communicating with each other and having





a shape substantially similar to that of said discharge pressure chamber, the element having a continuous channel extending from a top peripheral surface thereof through an end surface thereof facing said casing to a bottom peripheral surface thereof for cooperating with an associated inner surface of said casing to provide an oil passage, the element being disposed within the discharge pressure chamber element with substantially the entire surfaces thereof in contact with the surfaces of said chamber; and

means in the discharge chamber for guiding fluid delivered to said element toward said compressor outlet means.

4,269,577

PRODUCTION LINE FOR THE MANUFACTURE OF CONCRETE ELEMENTS

Mircea Borcoman, 8, rue des Dardanelles, 75017 Paris, France

Filed Jul. 11, 1979, Ser. No. 56,624
Claims priority, application France, Jul. 17, 1978, 78 21167
Int. Cl.³ B29C *25/00*
U.S. Cl. 425—62 **22 Claims**

1. A manufacturing line for the manufacture of non-reinforced, reinforced, or pre-stressed concrete such as piles, posts, slabs, beams, panels, curbs and the like, conprising:

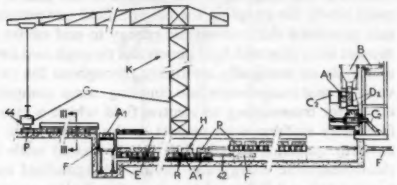
casting means for casting and compacting concrete in the moulds,

a hardening circuit for hardening the concrete elements which have been cast by the casting means,

a removal means for removing the hardened concrete elements from the hardening circuit,

a moat adapted to be filled with a liquid,

a chain of floats movable along said moat, means for placing on the floats the concrete elements which have just been cast by the casting means, said moat being positioned to convey the said moulded concrete elements from said casting means, through said hardening circuit and to said removal means,



returning means for conveying the floats from said removal means back to said casting means,

and means for varying the equilibrium of each float in the liquid by introducing liquid into the float or removing liquid therefrom.

4,269,578

APPARATUS FOR FORMING A WEB OF MATERIAL

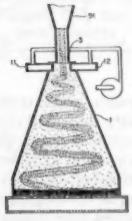
Lennart Gustavsson, Växjö, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Stockholm, Sweden

Division of Ser. No. 884,850, Mar. 9, 1978, Pat. No. 4,197,267, which is a continuation-in-part of Ser. No. 725,726, Sep. 21, 1976, Pat. No. 4,099,296. This application Oct. 12, 1979, Ser. No. 84,109

Claims priority, application Sweden, Sep. 26, 1975, 7510795

Int. Cl.[3] **B28B** *5/00*

U.S. Cl. 425—83.1 **4 Claims**



1. In an apparatus for forming a web of particulate material comprising a distribution chamber, a carrier surface provided therein, a nozzle opening within the distribution chamber for supplying a composite stream of particulate material distributed in a carrier gaseous medium, and blow box means for supplying control jets of air to opposite sides of said composite stream to impart a variable impulse to cause said composite stream to be distributed across the full width of the distribution chamber and the carrier surface therein, the improvement comprising a transition zone provided in advance of said nozzle opening through which said composite stream must pass, said transition zone comprising a zigzag passageway which diverges in cross section toward the distribution chamber in the direction of movement of the carrier surface to assure uniform dispersion of the particulate material throughout the carrier gaseous medium.

4,269,579

APPARATUS FOR INJECTION MOLDING AGAINST A PREFORMED WEB

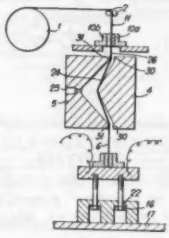
Berwyn C. Thomas, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 830,768, Sep. 6, 1977, Pat. No. 4,216,184. This application Jan. 22, 1980, Ser. No. 114,351

Claims priority, application United Kingdom, Sep. 13, 1976, 37831/76

Int. Cl.[3] **B29C** *1/00, 3/04*

U.S. Cl. 425—111 **8 Claims**



1. Apparatus for injection moulding thermoplastics material onto a preformed web paid out so as to pass between closable core and cavity components of an injection mould and so as to have a free distal end protruding below the mould components, and a proximal portion above the mould components, said apparatus comprising: an injection mould having closable core and cavity components; engaging means for engaging a load on the free distal end of the preformed web protruding below the mould components; a load engageable on a said distal end by the engaging means, the load being free to move with a distal end on which it is engaged; and holding means located above and fixed relative to the mould components for holding a proximal portion of a web against a load engaged on a distal end of the web below the mould components, whereby when the mould components are closed onto a preformed web located between the components they cause a free distal end of a web protruding below the components to move in response to the closing of the mould whereupon the load attached to such a distal end moves with the distal end and controls the tension in the web during the closing of the mould.

4,269,580

COMPRESSION MOLDING PRESS WITH HYDRAULIC CONTROLS

Dolph D. Wright, Union Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 11, 1980, Ser. No. 158,476

Int. Cl.[3] **B30B** *15/16*

U.S. Cl. 425—150 **4 Claims**

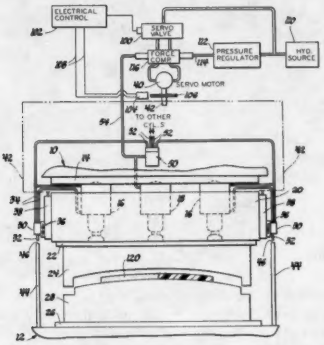
1. A hydraulic control for a compression molding press, the press having a bed, a ram, and a plurality of hydraulic cylinders positioned on the ram to provide the main press force for urging the ram toward the bed, including

A plurality of position transducers each having a pair of separate parts mounted on supports respectively comprising the ram and the bed, the parts of each pair being aligned to contact each other upon press closing, means for movably mounting one part of each pair on its support for adjustment of its position relative to its complementing part, the parts of each pair consisting of a hydromechanical servo valve including a cam follower and a stop member including a cam surface for contacting the cam follower,

the hydromechanical servo valves each hydraulically coupled with an adjacent one of said cylinders to control the cylinder pressure, the cam follower of each servo valve having a neutral position where the servo valve effects no

change in cylinder pressure wherein any movement of the cam follower from the neutral position effects corresponding changes in cylinder pressure to return the cam follower toward neutral position,

the stop members being arranged to uniformly contact all the cam followers when the ram is near its press closed position and is parallel to the bed, and to preferentially contact the servo valve cam followers when the ram is not parallel to the bed to change the pressure in at least one cylinder to return the ram to parallel attitude,



drive means connected to the movable part of each pair for synchronously changing the relative positions of the servo valves and the stop members whereby the servo valves control the cylinders to move the ram sufficiently to restore the relative position of the servo valves and the stop members, and

control means for energizing the drive means for controlling the velocity and position of the ram according to a preset scheme.

4,269,581

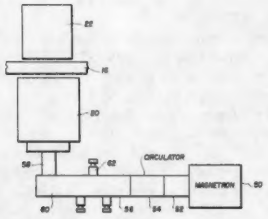
APPARATUS FOR MOLDING THERMOSETTING MATERIAL

Michael G. Ury, Bethesda, and Patrick J. Ryan, Laurel, both of Md., assignors to Fusion Systems Corporation, Rockville, Md.

Filed Sep. 14, 1979, Ser. No. 75,599

Int. Cl.[3] **H05B** *9/00*

U.S. Cl. 425—174.4 **20 Claims**



1. An apparatus for molding articles of thermosetting material rapidly, uniformly, and without the occurence of hot spots or other defects comprising,

a mold including a mold cavity which conforms to the desired shape of said articles for receiving said thermosetting material,

means for mounting said mold in said molding apparatus,

means for generating electromagnetic energy of microwave frequency,

transmission line coupling means located on one side of said mold cavity for coupling the electric field component of said generated electromagnetic energy to said cavity in a manner such that said field penetrates through said cavity uniformly or essentially uniformly throughout the cavity volume, said transmission line coupling means comprising means for transmitting an electric field which is circumferentially uniform with respect to the transmission element or elements of said line when excited with said electromagnetic energy and having a longitudinal transmission axis and a shape in cross-sectional planes perpendicular to said axis which is similar to the shape of a cross-sectional plane of said article being molded, and

discrete field shaping means disposed on the other side of said mold cavity from said transmission line coupling means for providing a termination for said electric field lines penetrating through said mold cavity, thereby tending to maximize the electric field which is directed through said cavity.

4,269,582

PASTA-MAKING MACHINE

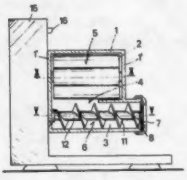
Mario Mella, Via Curtatone 11, Desenzano (Brescia), Italy

Filed Nov. 20, 1979, Ser. No. 96,176

Claims priority, application Italy, Nov. 21, 1978, 7122/78[U]; Dec. 29, 1978, 7152/78[U]

Int. Cl.[3] **A21C** *3/04*

U.S. Cl. 425—190 **15 Claims**



1. A machine for kneading and extruding pasta said machine comprising a base, a body supported on said base and adapted to rotate about a horizontal axis, said body having two chambers each having a horizontal axis, an intermediate passage providing communication between said chambers, a first one of said chambers having an opening for the introduction of the ingredients to be kneaded into dough, said other chamber including an extruding die at one end thereof, kneading means mounted on the axis of said first chamber and a conveyor member mounted on the axis of said second chamber whereby said conveyor member is located above said kneading means during the kneading phase and said conveyor member is located below said kneading means during the phase of shaping the pasta by extrusion.

4,269,583

PILOTS FOR FLARE STACKS

John F. Straitz, III, Meadowbrook, Pa., assignor to Combustion Unlimited Incorporated, Philadelphia, Pa.

Filed May 22, 1978, Ser. No. 908,582

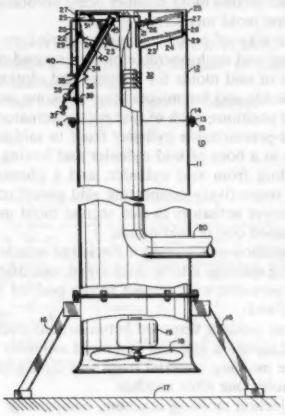
Int. Cl.[3] **F23D** *13/20*

U.S. Cl. 431—202 **12 Claims**

1. A flare stack including a pilot burner, means for delivering air through said stack to the terminal end of said stack, said

stack having means for delivering waste combustible gas through nozzle means at said terminal end of said stack for combustion at said terminal end in the atmosphere,

a pilot burner head interiorly disposed in said stack at said terminal end of the stack and adjacent to said nozzle means,



means for supplying a combination of combustible gas and air to said pilot burner head for combustion, and

means for providing additional air to said burner head comprising an air tube within said stack in which said burner head is positioned for aiding combustion and stabilizing the pilot burner flame.

4,269,584

HOT PELLETIZER FOR EXTRUDERS

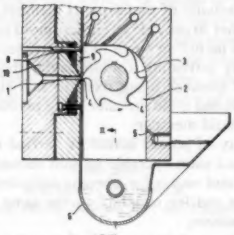
Walter Kroll, Roethenbach-St. Wolfgang, and Günther Stefan, Erlangen-Bruck, both of Fed. Rep. of Germany, assignors to Leistritz Maschinenfabrik Paul Leistritz GmbH, Nuremberg, Fed. Rep. of Germany

Filed Feb. 28, 1979, Ser. No. 16,458

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1978, 2809680; Dec. 14, 1978, 2854024

Int. Cl.³ B29C *17/14*

U.S. Cl. 425—313 **16 Claims**



1. A pelletizing device for use with an extruder comprising a die plate through which a plastic ribbon is extruded, said die plate having means defining a plurality of extrusion openings through which the plastic ribbon is extruded, said plurality of openings having their axes disposed in aligned parallel array and in a common, generally horizontal plane such that said openings are disposed at generally the same elevation, a rotatable spiral cutter having spiral cutting edges, said spiral cutter having an axis of rotation disposed generally horizontally and generally perpendicular to the longitudinal axes of said extrusion openings, said openings having their axes intersecting said axis of rotation of said spiral cutter, said spiral cutting edges being spirally disposed about the axis of rotation of said spiral cutter, said spiral cutter being disposed and arranged relative to the openings of said die plate to cut pellets from the ribbons emerging from adjacent die openings in a successive and non-simultaneous manner to thereby reduce the opportunity for just-cut pellets to adhere to one another, and means defining a channel containing a cooling liquid, said channel being disposed to underlie said spiral cutter so that the pellets upon being cut by said spiral cutter fall freely by gravity into said cooling liquid in said channel to be rapidly cooled by thermal shock so as to preclude adhesion between the pellets.

4,269,585

APPARATUS, INCLUDING AN ENDLESS BELT, FOR CONTINUOUSLY HOT PRESSING A WEB OF MATERIAL

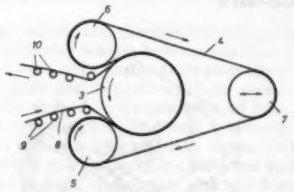
Rolf Gersbeck, Ronnenberg, and Manfred Krohn, Hanover, both of Fed. Rep. of Germany, assignors to Hermann Berstorff Maschinenbau GmbH, An der Breiten Wiese, Fed. Rep. of Germany

Filed Dec. 27, 1979, Ser. No. 107,567

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1978, 2856646

Int. Cl.³ B29C *3/00;* **B29D** *77/00;* **B29H** *7/22*

U.S. Cl. 425—373 **2 Claims**



1. Apparatus for continuously hot pressing a web of material comprising a heated rotatable drum, an endless pressure belt and means to pull said endless pressure belt against a part of the periphery of said drum with the web interposed between said drum and said belt, wherein said endless pressure belt is formed of a fabric of steel wires faced, at the side towards the web, with a resilient covering layer comprising a layer of butyl rubber bonded to said fabric of steel wires, a textile layer secured to said layer of butyl rubber and a layer of an elastomer resistant to high temperature secured to said textile layer to form the outer layer of said resilient covering layer.

4,269,586

HEATED PLATEN

James F. Ronayne, Fishkill, N.Y., assignor to Norfield Corporation, Danbury, Conn.

Filed Jan. 25, 1980, Ser. No. 115,337

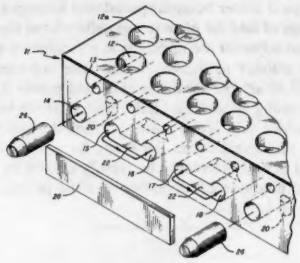
Int. Cl.³ B29C *5/00*

U.S. Cl. 425—407 **17 Claims**

1. A platen comprising:

a plate member having a plurality of fluid flow zones defined by a plurality of heat exchange channels extending across the width of the plate member, each of said fluid flow zones having an inflow pipe in communication with a first heat exchange channel in said fluid flow zone and an outflow pipe in communication with a last heat exchange channel in said fluid flow zone, and a plurality of connecting channels alternately disposed on each side of said plate

member and in communication with adjacent heat exchange channels within each fluid flow zone; and



a pair of separate sealing means for sealing each of said plurality of fluid flow zones, so that each pair of said separate sealing means seals only one fluid flow zone.

4,269,587

COMPRESSION MOULDING PRESSES

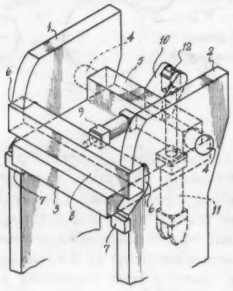
Harold W. Tranter, Aldridge, England, assignor to British Industrial Plastics Limited, Great Britain

Filed Jan. 7, 1980, Ser. No. 110,037

Claims priority, application United Kingdom, Jan. 12, 1979, 1318/79

Int. Cl.³ B29C *1/00*

U.S. Cl. 425—451.9 **9 Claims**



1. An upstroking compression moulding press including a pair of side frame members to support an upper, fixed platen which is pivotably supported between said members, said platen having locking means thereon comprising a locking bar extending over at least the thickness of both of said sideframe members and the distance between them, together with means for displacing said bar from a first position in which it is spaced from said members and a second position in which end portions of the bar are received in notches in said members.

4,269,588

INJECTION MOLDING MACHINE

Akira Nogai, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Aug. 9, 1979, Ser. No. 65,104

Claims priority, application Japan, Aug. 12, 1978, 53-98295; Aug. 18, 1978, 53-101336

Int. Cl.³ B29F *1/06*; B29D *5/00*

U.S. Cl. 425—545 **10 Claims**

1. An injection molding machine, comprising:

(a) a base;

(b) a rotatable support member supported on said base;

(c) a plurality of molds supported on said support member and arranged along its periphery, said molds extending circumferentially of said support member so as to fit next to each other to provide an endless mold assembly, each of said molds including a pair of first and second mold members jointly providing a mold cavity therebetween, said first mold member being fixed to said support member, and said second mold member being pivotally mounted on said first mold member;

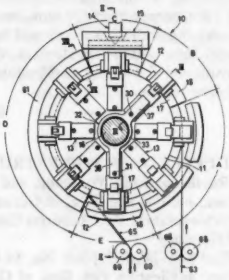
(d) a plurality of power actuators carried on said support member and each operable on said second mold member of one of said molds for opening and closing said one of said molds and for maintaining the same in its open and closed positions; each of said power actuators comprising a fluid-pressurizable cylinder fixed to said support and a piston in a bore of said cylinder and having a piston rod extending from said cylinder, and a plurality of toggle joints respectively connecting said piston rod of each of said power actuators to said second mold member of the last-named one of said molds;

(e) an injection unit having a discharge nozzle from which molding material is to be discharged, said discharge nozzle being movable with respect to the path of travel of said molds; and

(f) a sprue member disposed between said discharge nozzle of said injection unit and said mold assembly for conducting the molding material from said discharge nozzle into said molds one after another.

5. An injection molding machine, comprising:

(a) a base;



(b) a rotatably support member supported on said base;

(c) a plurality of molds supported on said support member and arranged along its periphery, said molds extending circumferentially of said support member so as to fit next to each other to provide an endless mold assembly, each of said molds including a pair of first and second mold members jointly providing a mold cavity therebetween, said first mold member being fixed to said support member, and said second mold member being pivotally mounted on said first mold member;

(d) a plurality of power actuators carried on said support member and each operable on said second mold member of one of said molds for opening and closing said one of said molds and for maintaining the same in its open and closed positions;

(e) an injection unit having a discharge nozzle from which molding material is to be discharged, said discharge nozzle being movable with respect to the path of travel of said molds; and

(f) a sprue member disposed between said discharge nozzle of said injection unit and said mold assembly for conducting the molding material from said discharge nozzle into said molds one after another; said sprue member having a sprue communicating at one end with an orifice of said discharge nozzle, and a first seal means for temporarily sealing a mouth of the mold cavity of one of said molds immediately after the last-named mold cavity is filled with

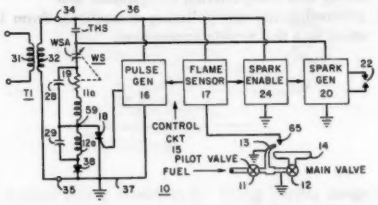
the molding material, said sprue member being movable between a first position where said sprue is communicatable at the other end with the last-named mold cavity and a second position where the mouth of the last-named mold cavity can be covered with said first seal means.

4,269,589

SOLID STATE IGNITION CONTROL

Russell B. Matthews, Goshen, Ind., assignor to Johnson Controls, Inc., Milwaukee, Wis.

Filed Dec. 4, 1978, Ser. No. 966,009
Int. Cl.³ F23Q *9/14*
U.S. Cl. 431—46 **40 Claims**



1. In a fuel ignition system including a pilot valve operable to supply fuel to a pilot outlet, spark generating means for generating ignition sparks in the proximity of the pilot outlet for igniting the pilot fuel, and a main valve operable to supply fuel to a main burner for ignition by the pilot flame, a control arrangement comprising: circuit means connecting an operate winding of said pilot valve and an operate winding of said main valve in a series circuit path, activate means operable to connect power to said series circuit path; switching means for controlling the energization of said valve windings; and control means operable in the absence of a flame at said pilot outlet to enable said switching means to provide a shunt circuit path around said main valve operate winding to permit current to flow through said pilot valve operate winding at a level which is sufficient to actuate said pilot valve; said control means responding to a flame at said pilot outlet to disable said switching means whereby said shunt circuit path is interrupted and said main valve operate winding is energized to actuate said main valve, said pilot valve operate winding being maintained energized over said series circuit path including said main valve solenoid when said switching means is disabled, and current limiting means including said main valve operate winding for limiting the current flow through said series circuit path to a level which is insufficient to actuate the pilot valve when said switching means is disabled, whereby actuation of said pilot valve is conditioned upon the enabling of said switching means.

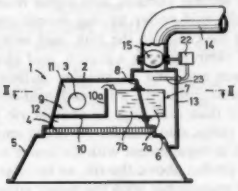
4,269,590

RADIANT BURNER

Herbert Baumanns, Beller Strasse 187, 4070 Rheydt, Fed. Rep. of Germany

Continuation of Ser. No. 877,431, Feb. 13, 1978, abandoned. This application Jan. 9, 1979, Ser. No. 2,166
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1977, 2706043
Int. Cl.³ F23D *13/12*
U.S. Cl. 431—210 **23 Claims**

1. A radiant burner comprising:
(a) a burner housing having an opening therein;
(b) a burner plate extending across said opening in said housing;
(c) a shield extending from said burner housing about said burner plate;
(d) at least one outlet in said shield for conducting combustion product gases therethrough;
(e) inlet means for feeding combustible gas and air or a combustible air-gas mixture into said burner housing;
(f) a plurality of heat transfer elements spaced from said inlet means in said burner housing;
(g) means in said burner housing for directing the flow of said combustible gas-air mixture from said feeding means into contact with said heat transfer elements before passing through said burner plate;
(i) said combustible gas-air mixture directing means comprising means defining a chamber in said burner housing spaced from said burner plate and from said heat transfer means for receiving the combustible gas-air mixture from said inlet means, said chamber-defining means including outlet means arranged to direct the flow of the combustible gas-air mixture from said chamber into contact with said heat transfer elements before said mixture reaches



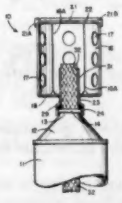
said burner plate to preheat said combustible gas-air mixture;
(j) said means defining said chamber comprising a first guide plate in said burner housing between said inlet means and said burner plate and a further guide plate extending from said first guide plate between said inlet means and said heat transfer elements to a position spaced from a wall of said burner housing such that said combustible air-gas mixture is directed from said inlet means through the space between said further guide plate and said wall of said burner housing into contact with said heat transfer elements; and
(k) means for transmitting heat from said combustion product gases passing through said outlet to said heat transfer elements;
(h) whereby the heat from said combustion product gases is transmitted through said heat transfer elements to preheat said combustible gas-air mixture in said burner housing.

4,269,591

HEATER UNIT AND CONTAINER

William P. Knoll, 1326 N. Elm St., Fargo, N. Dak. 58102

Continuation of Ser. No. 794,083, May 5, 1977, abandoned. This application Sep. 21, 1978, Ser. No. 944,357
Int. Cl.³ F23D *3/04, 31/18*
U.S. Cl. 431—312 **13 Claims**



1. An apparatus for controlling combustion of an inflammable liquid fuel comprising: a container having a side wall, bottom, and a top defining a first chamber for storing an in-

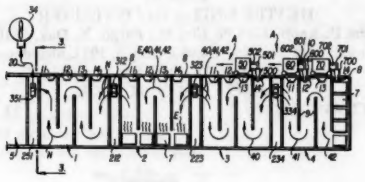
flammable liquid fuel, said top having an annular outwardly directed continuous ring located around an opening in communication with the first chamber, said ring having an upper edge and a lower edge adapted to accommodate a cap for closing said opening, a heater unit releasably mounted on said ring to connect the heater unit to the container, said heater unit having a cup-shaped housing defining a second chamber, said housing having a bottom wall and a cylindrical side wall, said bottom wall having a center hole and at least one aperture, said side wall having a plurality of upright arcuate segments having substantially parallel edges defining elongated narrow slots extending the length of the housing side wall and separating adjacent segments, each segment having a lower portion joined to the bottom wall, at least one segment having at least one aperture, a tubular member extended through the hole in the bottom wall and secured to the bottom wall, said tubular member having a first portion extended into the second chamber surrounded by the housing side wall and a second portion extended below said bottom wall, a collar secured to the lower end of the second portion, said collar being spaced from the bottom wall, said collar having mount means for releasably connecting the collar to the ring, said mount means including an annular ramp forming a mouth, said ramp having an outer end, an inner end, and an annular surface inclined inwardly from the outer end to the inner end, said outer end of the ramp being larger than said ring, an annular rib joined to the inner end of the ramp, said annular rib being smaller than said ring and located in engagement with the lower edge of the ring, and an annular pocket above the rib, an annular seal located in the pocket and engageable with the upper edge of the ring to seal the collar on the ring, and an elongated wick located in the tubular member, said wick being extended through the tubular member and downwardly into the first chamber, said wick located in tight compressive engagement with the tubular member.

4,269,592

CONTROL OF COMBUSTIBILITY OF VOLATILE HYDROCARBONS AND PARTICULATE MATTER IN AN EXHAUST GAS STREAM BY USE OF A HIGH VELOCITY BURNER IN A CARBON BAKE RING FURNACE

Charles M. Benton, 4320 Landsdowne St.; Franklin D. Arnold, 2200 Venetian Way; Helge O. Forberg, 215 Wildwood Dr., all of Owensboro, Ky. 42301; Roger L. Tuscher, Rte. 1, Box 343, and Gerald D. Evrad, Rte. 1, Box 171, both of Cannelton, Ind. 47520

Filed Feb. 8, 1980, Ser. No. 119,920
Int. Cl.³ F27D 7/00; F27B 9/00
U.S. Cl. 432—19 **37 Claims**



1. A method of controlling the combustibility of volatile hydrocarbons and particulate matter in an exhaust gas stream driven off from a carbon product being baked in a furnace, comprising the steps of:

a. heating the exhaust gas stream containing the volatile hydrocarbons and particulate matter to a temperature of at least 900° C.;

b. force-drafting and mixing at least one heat transfer medium into the exhaust gas stream so that the exhaust gas stream contains at least approximately 6% oxygen; while forming the at least one heat transfer medium by a series of substeps including:

(i) supplying air to at least one high velocity burner means for combusting the volatile hydrocarbons and particulate matter;

(ii) supplying fuel to said at least one high velocity burner means;

(iii) maintaining the air and fuel in said at least one high velocity burner means at a constant preset volume ratio via a regulator connected to a line means for supplying said fuel;

(iv) activating the regulator via an impulse line connected to a line means for supplying said air;

(v) combusting the air/fuel mixture in said at least one high velocity burner means in order to form the at least one heat transfer medium;

c. combusting the volatile hydrocarbons and particulate matter into non-polluting compounds; and

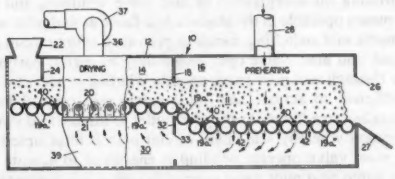
d. exhausting the non-polluting compounds from the furnance into the outside atmosphere.

4,269,593

ROLLER GRATE MATERIAL BED CONVEYING AND HEAT EXCHANGE APPARATUS PROVIDING PLURAL BED DEPTHS

Bobby P. Faulkner, New Berlin; Wayne D. Heyer, Greendale, and Michael H. Weinecke, Greenfield, all of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 21, 1979, Ser. No. 105,981
Int. Cl.³ F27B 15/00
U.S. Cl. 432—58 **15 Claims**



1. Roller grate apparatus for simultaneously transporting, agitating, and transferring heat to or from a bed of discrete solid mineral particles comprising, in combination, a plurality of parallel elongated cylindrical rollers mounted for rotation about their longitudinal axes certain of which are first rollers and others of which are second rollers, means for rotating said plurality of rollers in the same direction, elongated filler members in the gap between adjacent rollers, said rollers having gas passage apertures therein which permit a heating gas to pass in a generally vertical direction through said rollers, said first rollers being positioned at the inlet to said apparatus in a first generally horizontal plane to receive said mineral particles fed to the apparatus, said second rollers being positioned downstream from said first rollers at elevations lower than said first generally horizontal plane, said first rollers and said second rollers together with said filler members defining a generally horizontal surface having progressively lower levels in the direction of bed transport and having continually moving portions which are adapted to agitate particles and transport said bed across said surface in a direction perpendicular to the longitudinal axes of said rollers at a velocity which is only a minor fraction of the circumferential velocity of said rollers, and means for passing a stream of heat transfer gas in a generally vertical direction through said gas passage apertures and said bed of mineral particles being conveyed on said rollers.

4,269,594

CONTACT HEAT FUSING APPARATUS

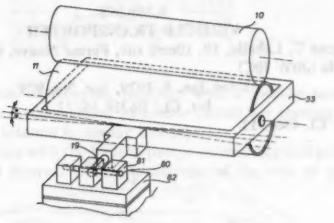
Frans M. Umans, Mortsel; Willy G. Ceuppens, Borgerhout; Willy J. Palmans, Kessel, and Robert T. Overmeer, Mortsel, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Dec. 5, 1978, Ser. No. 966,595

Claims priority, application United Kingdom, Dec. 7, 1977, 50952/77

Int. Cl.[3] G03G *13/20;* H05B *3/10*

U.S. Cl. 432—59 11 Claims



1. A contact fusing apparatus for fusing a toner image carried on a support, comprising a fuser roller having an elastically deformable surface and having associated heating means for heating such roller to a temperature sufficient to cause fusion of toner, an opposed pressure roller forming with said fuser roller a bite through which a support carrying a toner image can pass, means for transmitting a driving torque to at least one of such rollers, clamping means operative to apply a clamping force to at least one of such rollers to maintain the two rollers in an operative position with a clamping pressure in the bite thereof sufficient to cause elastic deformation of said roller surface, separate frame means each having two opposite sides for supporting the opposite ends of said fuser and pressure rollers respectively and means mounting one of said frame means for differential relative limited free bodily movement of its opposite sides, and of the roller ends supported thereby, away from and towards the corresponding sides of the other frame while the rollers are maintained in said operative position, the axis of the roller supported by said movably mounted frame means remaining during its movement generally within a plane perpendicular to a tangent through said bite, whereby the separation between said roller axes while the rollers are in said operative position can vary nonuniformly along the length of said bite in response to instantaneous variations in the thickness of the toner image across the support.

4,269,595

PREFABRICATED NON-PRECIOUS PONTIC

Mike Z. Nemethy, Treasure Island, Fla., assignor to Ormond H. Ware, St. Petersburg, Fla., a part interest

Filed May 25, 1979, Ser. No. 42,708

Int. Cl.[3] A61C *13/22*

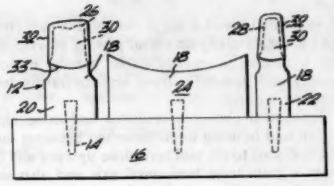
U.S. Cl. 433—191 7 Claims

1. A prefabricated pontic framework for dental bridges, comprising:

a plurality of pontic supports, each said pontic support defining an enlarged mold for being completely surrounded by a coating of porcelain to form an artificial tooth;

each said pontic support having a pair of connecting bars extending therefrom;

each of said pontic supports being rigidly connected to at least one of the other of said pontic supports by one of its said pair of connecting bars and spaced from each other on the framework to accomodate the porcelain coating thereon so that said connecting bars are arranged and constructed to be cut to give said prefabricated pontic framework the desired length and number of said pontic supports for a given said bridge,



said pontic support and said connecting bars being formed of a structurally rigid, non-precious material.

4,269,596

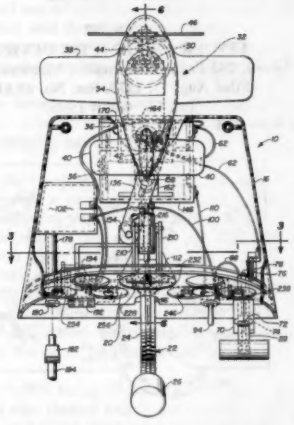
TOY AEROPLANE FLIGHT SIMULATING CONSOLE

Bruce M. D'Andrade, Whitehouse Station, N.J., assignor to Arco Industries Ltd., Kowloon, Hong Kong

Filed Apr. 25, 1980, Ser. No. 143,848

Int. Cl.[3] G09B *9/08;* A63H *27/04*

U.S. Cl. 434—32 10 Claims



1. A toy aeroplane flight simulator console comprising in combination:

(a) A console housing adapted to be supported upon a table or the like and having a front face,

(b) A substantially vertical single staff projecting upward from a rearward portion of said housing,

(c) An instrument panel on said front face of said housing,

(d) A model toy aeroplane having a propeller on the nose of the fuselage thereof and an electric motor in said fuselage connected to said propeller to drive it,

(e) Socket means in the lower portion of said fuselage of said aeroplane adapted to be disengageably received upon the upper end of said single staff to attachably connect the aeroplane thereto for support and manipulation of said aeroplane for flight simulating maneuvers about multiple horizontal axes perpendicular to each other,

(f) D.C. battery means in said console,

(g) A motor throttle lever pivotally supported by said console and positioned forwardly of said instrument panel for manual manipulation,

(h) An electric circuit connecting said battery to said motor in said plane and a rheostat engaged by said throttle lever to vary the speed of the aeroplane propeller,

(i) Co-engageable contacts in said socket in the fuselage of said aeroplane and on the upper end of said staff and included in said circuit to complete said circuit when said aeroplane is mounted operatively upon said staff for support,

(j) A simulated joystick supported within said console housing for substantially universal pivotal movement and having a manually manipulatable handle projecting outwardly and upwardly from and forwardly beyond said instrument panel,

(k) Mechanical elements enclosed and concealed entirely within said housing interconnected between said joystick and said staff to tilt said aeroplane upward and downward about a transverse horizontal axis and also sideways in opposite directions about a longitudinal horizontal axis perpendicular to said transverse horizontal axis when said joystick respectively is pivoted about a horizontal transverse axis and about a longitudinal horizontal axis,

(l) Motor speed-indicating dial means on said instrument panel connected to and operated by movement of said motor throttle lever,

(m) Flight direction-indicating dial means on said instrument panel connected to and operated by movement of said joystick, and

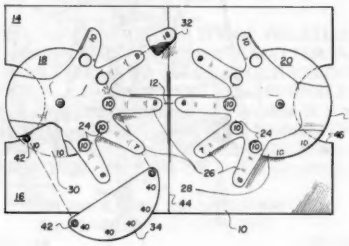
(n) A horizontal wing attitude-indicator operable relative to a fixed line on said instrument panel and connected to and operated by said joystick to indicate the level of the wings of the aeroplane relative to the horizon.

4,269,597

FINGER ARITHMETIC DEVICE

Martin Green, 243 Franklin Turnpike, Mahwah, N.J. 07430

Filed Aug. 27, 1979, Ser. No. 69,816
Int. Cl.³ G09B *19/02*
U.S. Cl. 434—198 **5 Claims**



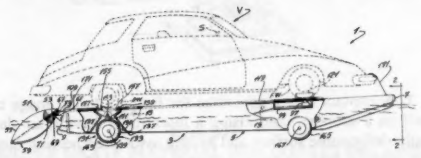
1. An educational device for training in arithmatic comprising, a base member, a pair of spaced hand like members rotatably mounted on said base member each having a wheel portion and five finger portions extending outwardly therefrom, each of said wheel portions including five circumferencially spaced apertures with each aperture aligned with one of said finger portions, said base member including a reference line dividing the surface thereof into an upper multiplication area and a lower addition area, an arcuate area below said reference line and beneath each of said wheel portions each having a row of numbers 10 aligned with the circumference of said wheel portions containing said apertures, each of said finger portions having a numeral thereon and alignable with said reference line whereby the product of the numerals of the finger portions aligned with said reference line can be obtained by multiplying the number of finger portions in said multiplication area of one hand member by the number of finger portions in said multiplication area of the other of said hand members and adding to this the sum of the numbers 10 appearing through the apertures in said addition area, a finger adapter for each of said finger portions slidable onto each of said finger portions respectively, each finger adapter having a number thereon which is a multiple of the numeral of that finger portion, and an addition area adapter fastenable over each of said arcuate areas having a row of numbers thereon corresponding to twice the multiple times 10 with the numbers of said arcuate area adapters aligned over said rows of ten's whereby the product of the numbers now appearing on the finger portions aligned with said reference line can now be obtained by multiplying the number of finger portions times the multiple of one hand member above the reference line times the number of finger portions times the multiple of the other hand member above the reference line and adding to this the summation the numbers appearing through the apertures in said addition area.

4,269,598

VEHICLE TRANSPORTER

Eugene C. Labelle, 19, 10eme rue, Ferme Neuve, Quebec, Canada (J0W 10C)

Filed Jan. 4, 1979, Ser. No. 979
Int. Cl.³ B63H *16/12*
U.S. Cl. 440—11 **18 Claims**



1. A vehicle transporter having: flotation means for supporting a vehicle; the flotation means comprising at least a pair of elongated, non-rotating spaced-apart, parallel floats, and means for joining the floats together; at least one drive means on one of said floats for use in propelling the transporter on land and water using power from the drive means of the supported vehicle; said drive means on said float having an impeller rotatably mounted on the float and projecting below the float, and a drive roller mounted on the float above the impeller and in friction contact with the impeller, the drive roller adapted to be contacted by the vehicle drive means.

13. A vehicle transporter having: flotation means for supporting a vehicle; loading means at the rear of the flotation means for use in loading a vehicle on the flotation means; means for pivotably mounting the loading means to the flotation means for pivoting movement about an upright axis and means for pivoting the loading means about the upright axis to steer the transporter when in water.

4,269,599

COOLING SYSTEM OF SELF-PROPELLED FLOATING CRANE ENGINES

Vladimir M. Zhestkov, prospekt Generala Ostryakova, 106, kv. 49; Vladimir M. Tsypin, ulitsa Volodarskogo, 5, kv. 5; Mikhail Z. Grzhebin, ulitsa Drozdova, 3, kv. 35; Vadim A. Kaminsky, ulitsa Istomina, 14-b, kv. 48, and Vitaly G. Mazepov, ulitsa Jumasheva, 8, kv. 18, all of Sevastopol, U.S.S.R.

Filed Aug. 27, 1979, Ser. No. 70,038
Claims priority, application U.S.S.R., Aug. 30, 1978, 2662126
Int. Cl.³ B63H *23/32;* **B63B** *39/03*
U.S. Cl. 440—88 **2 Claims**

1. A cooling system of self-propelled floating crane engines, comprising:

internal hydraulic circuits of said engines;

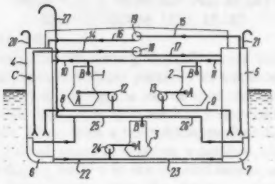
external hydraulic circuit cooling said internal hydraulic circuits, incorporating:

tanks filled with liquid and compulsorily connected to each other;

said tanks arranged on the pontoon of said floating crane so that an underwater outer skin of the pontoon of said floating crane forms a portion of their surface;

skin heat exchangers made in the form of surface heat exchanging apparatus and disposed in said tanks;

pipelines provided with built-in pumps and connecting said heat exchangers with at least one of said internal hydraulic circuits;



said skin heat exchangers, pipelines with a built-in pump forming a self-contained hydraulic circuit for cooling at least one internal hydraulic circuit;

other pipelines with the built-in pumps connecting said tanks with said internal hydraulic circuits of the rest of said engines.

4,269,600

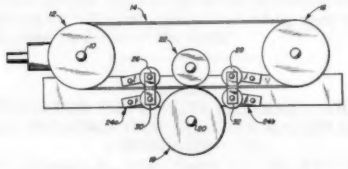
DRAW TRANSMISSION

Thomas F. Curran, 460 N. Main St., Wauconda, Ill. 60084

Filed May 7, 1979, Ser. No. 36,409

Int. Cl.³ F16H *9/00, 11/00*

U.S. Cl. 474—69 **14 Claims**



1. A transmission system for differential speed control, which comprises:

input means connected to a driven input pulley;

an endless resilient member coupled to said driven input pulley and driven by said input pulley;

tensioning means spaced from said input pulley for providing tension for said endless resilient member;

output means connected to an input pulley, said output pulley being an idler pulley located intermediate said driven pulley and said tensioning means and with its periphery in contact with said resilient member;

said output pulley being spaced along the length of the resilient member from said input pulley; and

means for controlling the speed of said output pulley, said controlling means being coupled to said resilient member and being operative to vary the curvature of said resilient member with respect to the periphery of said output pulley while not substantially varying the curvature of said resilient member with respect to the periphery of said input pulley, whereby the neutral axis of said resilient member will be varied to control the speed of the surface of the resilient member that is contacting the periphery of said output pulley while the neutral axis of the resilient member around said input pulley remains substantially constant.

4,269,601

REAR DERAILLEUR FOR A BICYCLE

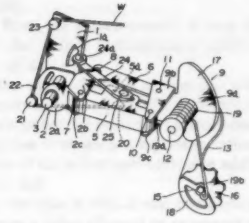
Masashi Nagano, Sakai, Japan, assignor to Shimano Industrial Company, Limited, Osaka, Japan

Filed Jan. 28, 1980, Ser. No. 116,210

Claims priority, application Japan, Feb. 15, 1979, 54/18629[U]

Int. Cl.³ F16H *11/04*

U.S. Cl. 474—82 **4 Claims**



1. A rear derailleur for a bicycle, which switches a driving chain to a selected one of multi-stage sprockets of the bicycle for changing speed, said derailleur comprising:

(a) a base member supported to a frame at the bicycle,

(b) a pair of linkage members pivoted swingably to said base member,

(c) a movable member supported to said pair of linkage members and moving with respect to said base member through a swinging motion of each of said linkage members,

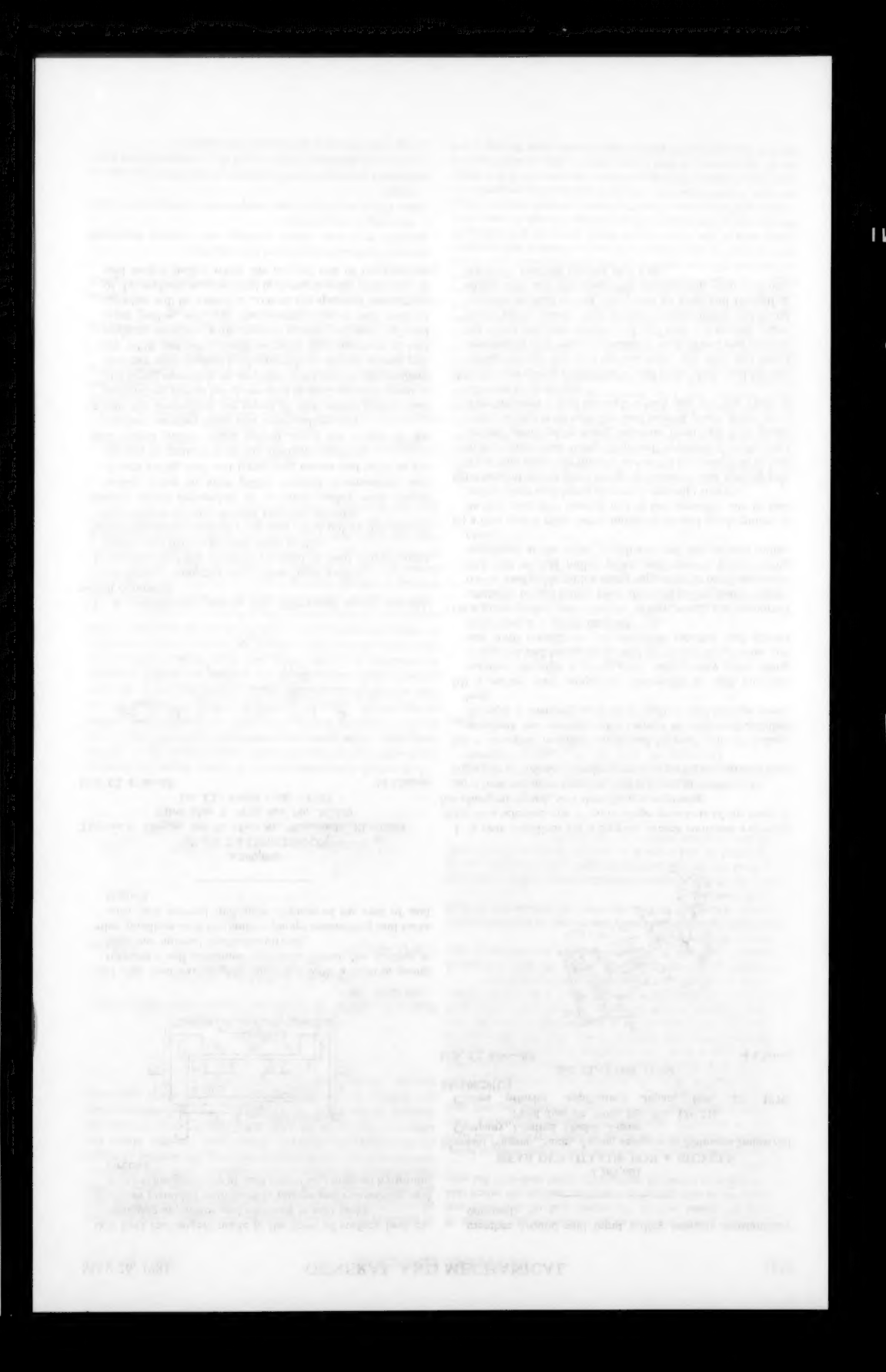
(d) a pulley plate supported swingably to said movable member through a pivot shaft, said pulley plate being elongated and being supported at its one lengthwise end side with respect to said movable member and spaced therefrom at a given interval,

(e) a guide pulley and a tension pulley which are supported rotatably to said pulley plate through pulley shafts respectively, said guide pulley being supported at one lengthwise end side of said pulley plate, said tension pulley being supported at the other lengthwise end side of said pulley plate,

(f) a first guard plate being mounted to said guide pulley at its one axial side thereof and at the opposite side to said pulley plate and being disposed opposite thereto,

(g) a second guard plate being mounted to said tension pulley at one axial side thereof and at the opposite side to said pulley plate and being disposed opposite thereto, said second guard plate being separate from said first guard plate, so that both said first and second guard plates have therebetween a gap through which said driving chain is allowed to pass, and

(h) a tension spring supported to said pivot shaft, said tension spring having first and second ends, said first end being retained by said movable member, said second end extending along the outer surfaces of said first and second guard plates to the pulley shaft of said tension pulley and being retained by said pulley shaft near an axial end thereof in engageable and disengageable relationship with said pulley shaft, thereby closing said gap.



4,269,602

BUFFERED NON-FORMALDEHYDE DURABLE PRESS TEXTILE TREATMENT

Daniel L. Worth, Greenwood, and Ernest A. Freeman, Jr., Ware Shoals, both of S.C., assignors to Riegel Textile Corporation, New York, N.Y.

Filed May 7, 1979, Ser. No. 36,641
Int. Cl.[3] D06M *13/2, 15/30*
U.S. Cl. 8—116.4 19 Claims

1. A process for imparting durable press properties to a textile fabric formed at least partially of cellulosic fibers and characterized by avoiding the use of formaldehyde and problems associated therewith, said method comprising impregnating the textile fabric with a formaldehyde-free finishing agent containing glyoxal, reactive silicone, a catalyst, and a buffering agent for reducing acidity in the treated fabric, and thereafter drying the fabric and curing the finishing agent to impart durable press properties to the fabric.

4,269,603

NON-FORMALDEHYDE DURABLE PRESS TEXTILE TREATMENT

Daniel L. Worth, Greenwood, S.C., assignor to Riegel Textile Corporation, New York, N.Y.

Filed May 4, 1979, Ser. No. 36,035
Int. Cl.[3] D06M *13/2, 15/30*
U.S. Cl. 8—116.4 19 Claims

1. A process for imparting durable press properties to a textile fabric formed at least partially of cellulosic fibers and characterized by avoiding the use of formaldehyde and problems associated therewith, said method comprising impregnating the textile fabric with a formaldehyde-free finishing agent comprising glyoxal, reactive silicone and a catalyst, and thereafter drying the fabric and curing the finishing agent to impart durable press properties to the fabric.

4,269,604

METHOD FOR THE ON-SITE DETERMINATION OF THE PRESENCE OF CORROSIVE MATERIAL IN LUBRICATING OIL

James E. Snowden, Jr., 1000 Country Place Dr., #277, Houston, Tex. 77079

Continuation of Ser. No. 719,591, Sep. 1, 1976, abandoned. This application Mar. 27, 1978, Ser. No. 890,055
Int. Cl.[3] G01N *33/30*
U.S. Cl. 23—230 HC 8 Claims

1. An on-site method for determining the need for replacement of lubricating oil in an engine or machine due to the buildup of acidic corrosive material and decrease of anti-corrosive additive therein, which comprises the steps of:

(a) removing a sample of oil from an engine or machine, the oil being suspected of having a buildup of acidic corrosive material therein, to provide a sample of freshly removed oil;

(b) dissolving said sample of freshly removed oil in a known volume of solvent therefor to form a solvent solution of freshly removed oil;

(c) titrating said solvent solution with a basic titrant to a preselected basic pH;

(d) titrating a blank solution of the same volume as said solvent but containing no freshly removed oil with the same titrant as used in step (c) to at least substantially the same preselected basic pH;

(e) measuring the volume of basic titrant used in each of steps (c) and (d);

(f) generating from the measurements of step (e) a signal indicative of the corrosive acidic material in the freshly removed oil;

(g) comparing the signal obtained in step (f) with a signal obtained by carrying out steps (a) through (f) on a sample of the same lubricating oil prior to its introduction into the engine or machine to obtain a comparison value indicative of acidic corrosive material buildup;

(h) removing a sample of oil from an engine or machine, the oil being suspected of having a buildup of basic corrosive material therein, to provide a sample of freshly removed oil;

(i) dissolving said sample of freshly removed oil in a known volume of solvent therefor to form a solvent solution of said freshly removed oil;

(j) titrating said solvent solution with an acidic titrant to a preselected acidic pH;

(k) titrating a blank solution of the same volume of said solvent but containing no freshly removed oil with the same titrant as used in step (j) to at least substantially the same preselected acidic pH;

(l) measuring the volume of acidic titrant used in each of steps (j) and (k);

(m) generating from the measurements of step (l) a signal indicative of the active anti-corrosive additive in the freshly removed oil;

(n) comparing the signal obtained in step (m) with a signal obtained by carrying out steps (h) through (m) on a sample of the same lubricating oil prior to its introduction into the engine or machine to obtain a comparison value indicative of the decrease of the active anti-corrosive additive in the lubricating oil; and

(o) determining the time at which said comparison value of step (g) achieves a value of equal to or greater than 2.5 to 3.0 concurrent to the time which said comparison value of step (n) achieves a value of equal to or less than 0.5.

4,269,605

METHOD AND KIT FOR SEPARATION OF GLYCOPROTEINS

Peter D. G. Dean, Formby; Peter J. Brown, and Vasilis Bouriotis, both of Liverpool, all of England, assignors to Amicon Corporation, Lexington, Mass.

Filed Jun. 27, 1979, Ser. No. 52,474
Claims priority, application United Kingdom, Jun. 28, 1978, 28195/78
Int. Cl.[3] G01N *33/66, 33/72*
U.S. Cl. 23—230 B 8 Claims

1. The method of separating glycoproteins from non-glycosylated proteins in a mixture which comprises bringing said mixture into contact with reactive agent comprising a dihydroxyboryl group bonded to a support to form a glycoprotein-dihydroxyboryl complex, and separating said complex from said mixture.

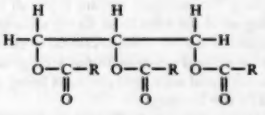
4,269,606

FUEL AND LUBRICANT ADDITIVES FROM ACID TREATED MIXTURES OF VEGETABLE OIL DERIVED AMIDES AND ESTERS

Benedict R. Bonazza, and Albert N. DeVault, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 714,159, Aug. 13, 1976, abandoned. This application Aug. 23, 1978, Ser. No. 936,308
Int. Cl.[3] C10L *1/22*
U.S. Cl. 44—63 6 Claims

1. A composition useful as a detergent additive package for lubricants and fuels prepared by reacting multiamine with vegetable oil to obtain a product mixture, said vegetable oil selected from among triglycerides of long chain monocarboxylic acids of the formula



wherein R is an aliphatic radical of about 10 to about 25 carbon

atoms said product mixture dissolved in an amount of hydrocarbon solvent sufficient to maintain said product mixture in solution.

4,269,607

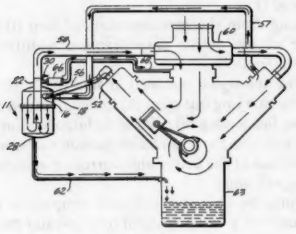
AIR-OIL SEPARATOR AND METHOD OF SEPARATION

Robert A. Walker, 2240 Sawtelle, Los Angeles, Calif. 90064

Continuation of Ser. No. 848,903, Nov. 7, 1977, abandoned. This application Apr. 23, 1979, Ser. No. 32,389

Int. Cl.[3] **B01D** *45/12, 45/06, 50/00;* **F01M** *13/04*

U.S. Cl. 55—1 **10 Claims**



1. An apparatus for separating oil and contaminants from air-oil contaminant mixtures from the crankcase of an internal combustion engine comprising:

a housing;

an intake inlet conduit of a first cross-sectional area communicating with the interior of the housing at a first end thereof;

an exhaust outlet conduit of a second cross-sectional area greater than said first cross-sectional area communicating with the interior of the housing, said outlet conduit being located at said first end of the housing whereby the gas pressure of said mixtures admitted into the unit is reduced in the flow from said inlet conduit to said outlet conduit;

said outlet conduit extending from the exterior into the interior of the housing a substantial distance from said first end toward an end of the housing opposite said first end;

a baffle located between said opposite end of the housing and the inlet conduit in the interior of the housing in the flow path of said mixtures from said inlet conduit to said outlet conduit for deflecting the mixtures flowing from said inlet conduit through the housing to alter the direction of flow whereby the mixtures pass into and through said outlet conduit to the exterior of the housing;

a mandrel having a mesh configuration extending between the interior open end of said outlet conduit and said baffle;

filtration material coaxially disposed about said mandrel and said outlet conduit and interposed in the flow path from said inlet conduit to said outlet conduit; and

drain means located at said opposite end for removing oil and contaminants deposited in said opposite end whereby crankcase emissions from the internal combustion engine directed through the apparatus have oil, sludge and particulate matter removed therefrom prior to reintroduction into the engine through a positive crankcase ventilation system.

8. A method of removing contaminants from an emission stream from the crankcase of an internal combustion engine comprising the steps of:

(1) transmitting the emission stream from an internal combustion engine to the inlet to an air-oil separator having an inlet conduit of a first cross-sectional area and an outlet conduit of a second cross-sectional area greater than said first cross-sectional area, said conduits being located at the same end of the housing;

(2) reducing the ambient pressure of the emission stream in the course of flow through the separator by flowing the emission stream from the smaller inlet conduit to the larger outlet conduit;

(3) reversing the direction of flow of said emission stream through the separator only once in the course of flow from inlet conduit to outlet conduit to exhaust the stream from the separator at the same end thereof at which the emission stream was introduced; and

(4) directing the flow of the emission stream through the separator from inlet conduit to outlet conduit so as to cause the emission stream to contact interior surfaces within the housing whereby pollutants and particulate matter in the emission stream are entrained and deposited in the separator.

4,269,608

METHOD AND DEVICE FOR SAMPLE INJECTION UNDER CONTROLLED CONDITIONS OF TEMPERATURE PROFILE INTO GAS CHROMATOGRAPHIC COLUMNS

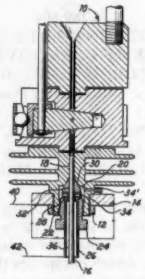
Giorgio Sisti, Melzo, Italy; Sorin Trestianu, Iselles, Belgium, and Mario Galli, Legnano, Italy, assignors to Carlo Erba Strumentazione S.p.A., Italy

Filed Aug. 2, 1979, Ser. No. 62,927

Claims priority, application Italy, Sep. 26, 1978, 28092 A/78; Nov. 7, 1978, 29498 A/78

Int. Cl.[3] **B01A** *15/08*

U.S. Cl. 55—67 **24 Claims**



1. A method for on-column injection of a liquid sample into a gas chromatographic capillary column, which column is at a gas chromatographic temperature such that vaporization of and separation of said liquid sample would normally occur, comprising

(1) injecting said sample in the initial portion of said gas chromatographic column by means of an injection device inserted into an injector duct of an on-column injector;

(2) cooling said sample in the injector duct and in a predetermined length of the gas chromatographic column to maintain a temperature profile of the sample so as to avoid vaporization of the sample in the injector duct, to ensure a desired rate of vaporization of the sample in said gas chromatographic column, and to trap inside said gas chromatographic column any back expulsion occurring during said injection step, said cooling being performed by at least one cooling fluid in thermal communication with said injector duct and/or said predetermined length of said gas chromatographic column; and

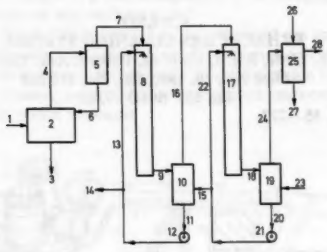
(3) maintaining such cooling at least until completion of said injecting step.

4,269,609

ISOLATING FLUORINE COMPOUNDS FROM THE VAPORS OBTAINED WHEN EVAPORATIVELY CONCENTRATING PHOSPHORIC ACID

Andreas Brunold, Bobenheim-Roxheim; Peter Kroetzsch, Ketsch, and Lothar Diehl, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 31, 1980, Ser. No. 117,129
Int. Cl.[3] B01D 47/00
U.S. Cl. 55—71 4 Claims



1. A process for removing fluorine compounds from the vapors that are obtained when phosphoric acid is evaporatively concentrated which comprises:

injecting an aqueous solution of about 20–28% by weight of fluosilicic acid into the upper part of a first scrubbing zone at a speed of from 15 m/s to 40 m/s under a reduced pressure of from 60–100 mbar and at a temperature at which condensation of steam is substantially avoided, said injected aqueous solution being finely divided over the entire cross section of the zone;

passing said vapors from which fluorine compounds are to be removed through said first scrubbing zone at a speed of from 5 m/s to 30 m/s in co-current with the aqueous fluosilicic acid solution, the residence time of said vapors being from 0.4 to 1.5 seconds;

passing the mixture of liquid and vapors from the first scrubbing zone to a first demisting zone where the liquid and vapors are separated, an aqueous solution of fluosilicic acid having a concentration of from 20 to 28% by weight being recovered from said demisting zone;

recycling a portion of said recovered aqueous solution of fluosilicic acid to the frst scrubbing zone;

injecting an aqueous solution of fluosilicic acid into the upper part of a second scrubbing zone at a speed of from 15 m/s to 40 m/s under a reduced pressure of from 60–100 mbar and at a temperature at which condensation of steam is substantially avoided, said aqueous solution being finely divided over the entire cross-section of the zone;

passing the vapors from the first demisting zone through said second scrubbing zone at a speed of from 5 m/s to 30 m/s in co-current with the aqueous fluosilicic acid solution, the residence time of said vapors being 0.4 to 1.5 seconds;

passing the mixture of liquid and vapors from the second scrubbing zone to a second demisting zone where the liquid and vapors are separated, an aqueous solution of fluosilicic acid being recovered from said demisting zone; and

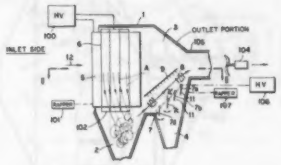
recycling a portion of said recovered aqueous solution of fluosilicic acid to the second scrubbing zone.

4,269,610

ELECTROSTATIC PRECIPITATOR WITH SUPPLEMENTAL MEANS FOR CATCHING DUST RELEASED FROM THE MAIN COLLECTOR PLATES

Yoichi Matsumoto, Takasago, Japan, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 851,355, Nov. 14, 1977, abandoned.
This application Sep. 12, 1979, Ser. No. 74,774
Claims priority, application Japan, Nov. 12, 1976, 51-135438
Int. Cl.[3] B03C 3/47, 3/76
U.S. Cl. 55—112 5 Claims



1. An electrostatic precipitator comprising:

a housing having an inlet side and an outlet portion horizontally spaced from said inlet side and traversed by a horizontal stream of gas entraining particles into said inlet side;

an array of main collector electrodes between said inlet side and said outlet portion in said housing and a plurality of arrays of main corona discharge electrodes in said housing for charging said particles, said main collector electrodes being vertical plates interleaved with said arrays of main corona discharge electrodes and being provided with rappers whereby said particles are deposited upon said main collector electrodes and are intermittently dislodged downwardly therefrom;

a main hopper formed on said housing directly below said main collector electrodes and arrays of main corona electrodes and opening upwardly toward said arrays of main electrodes in said housing for receiving particles dislodged from said main collector electrodes, said main hopper being upstream of said outlet portion, said outlet portion having a progressively decreasing flow cross section away from said main collector electrodes, said outlet portion having a floor inclined upwardly in the direction of flow of said stream;

an auxiliary hopper formed on said housing below said outlet portion and downstream of said main hopper, said auxiliary hopper communicating with the interior of said outlet portion through said upwardly inclined floor;

an auxiliary charged collector disposed above said auxiliary hopper along the bottom of said outlet portion and forming said upwardly inclined floor over said auxiliary hopper for collecting particles re-entrained by said gas and depositing same in said auxiliary hopper, said collector thereby being inclined upwardly in the direction of flow of the gas, said auxiliary collector being formed by a plurality of swingable flaps;

means for dislodging particles from said auxiliary collector and causing them to fall into said auxiliary hopper; and

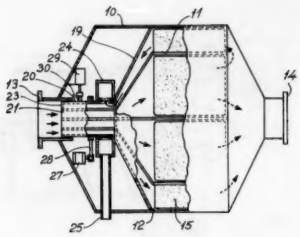
auxiliary corona discharge electrode means spaced above said auxiliary collector in said outlet portion for charging re-entrained particles and enabling their attraction to said auxiliary collector, the auxiliary electrode means being spaced from the arrays of main corona electrodes and being disposed so that particles entrained by gas out of said main hopper pass between said auxiliary electrode means and said auxiliary collector.

4,269,611

APPARATUS FOR DRYING OR DEHUMIDIFYING GASES

Erling L. Anderberg, Sverigesvej 2, DK-4200, Slagelse, Denmark

Continuation-in-part of Ser. No. 8,841, Feb. 2, 1979, abandoned, which is a continuation of Ser. No. 867,981, Jan. 9, 1978, abandoned. This application May 16, 1979, Ser. No. 39,604
Claims priority, application Denmark, Jan. 10, 1977, 85/77
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—179 **36 Claims**



1. An apparatus for drying or dehumidifying gases and comprising a plurality of chambers each having a gas inlet end and a gas outlet end communicating with a common gas inlet for gas to be dehumidified, and with a common gas outlet for dehumidified gas, respectively,

a plurality of spaced layers of a regenerable, moisture adsorbing medium arranged in each of said chambers,

selectively energizeable electrical heating means arranged within each of said chambers and extending between adjacent layers of adsorbing medium therein and in heat conducting contact with said layers,

unitary rotary valve means rotatable between a number of angular positions corresponding to the number of said plurality of chambers, said valve means being adapted to obstruct the communication between the inlet end of each of a minority of said plurality of chambers and said common gas inlet and to simultaneously communicate each inlet end of said minority of chambers with a gas discharge in each of said angular positions and each outlet end of said minority of chambers with said common gas outlet, whereby gas which has been dehumidified in the remaining chambers may flow through said minority of chambers from said common gas outlet to said gas discharge, and

means for energizing said heating means in each of said minority of chambers while such chamber is communicated with said gas discharge.

31. An apparatus for drying or dehumidifying gases and comprising

a housing defining a plurality of separate chambers therein and having an inlet end defining an inlet for gas to be dehumidified, and an outlet end defining an outlet for dehumidified gas, each of said chambers or passages communicating at its opposite ends with said gas inlet and said gas outlet ends, respectively,

a regenerable moisture adsorbing medium arranged within each of said chambers or passages, said adsorbing medium being divided into a plurality of adjacent spaced layers,

selectively energizeable electrical heating means arranged within each of said chambers or passages and extending between adjacent layers of adsorbing medium therein and in contact with each such layer,

means for directing gas to be dehumidified from said inlet end through a first group of said plurality of chambers or passages, said plurality of chambers comprising a first group and a second group,

means for simultaneously redirecting a flow of dehumidified gas from said outlet end through said second group of chambers or passages,

means for energizing said heating means in each of the chambers or passages in said second group for a period of time sufficient to regenerate adsorbing medium therein while dehumidified gas is being directed therethrough,

cooling means arranged at said inlet end of the housing for cooling said gas to be dehumidified in order to condense moisture therein,

heating means arranged at said outlet end of the housing for heating said dehumidified gas, and

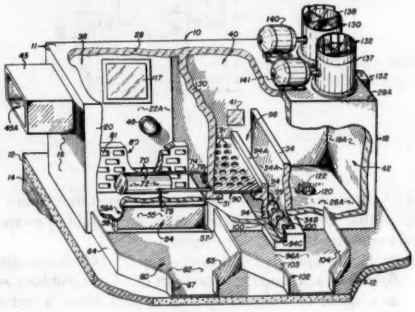
said cooling means and said heating means comprising an evaporator and a condenser, respectively, of a heat pump system.

4,269,612

EXHAUST GAS CLEANING SYSTEM

Joseph E. Little, Rte. 1, Hwy. 62, Pollard, Ark. 72456

Filed Jan. 10, 1980, Ser. No. 110,808
Int. Cl.³ B01D *47/02*
U.S. Cl. 55—227 **4 Claims**



1. A compartmentalized exhaust gas cleaning system adapted to be disposed upon a supporting surface, said system comprising:

a generally cubicle, rigid enclosure comprising a top wall, a bottom wall, a rear wall, a front wall and first and second spaced-apart end walls;

a first divider wall disposed within said enclosure in spaced-apart, generally parallel relation with respect to said end walls and extending downwardly from said top wall and terminating short of said bottom wall;

a second divider wall disposed within said enclosure between said first divider wall and said second end wall, said second divider wall extending vertically upwardly from said bottom wall and terminating short of said top wall;

an input compartment defined interiorly of said enclosure between said first end wall and said first divider wall, said imput compartment comprising:

liquid inlet means adapted to be connected to an external source of washing solution for admitting solution into said input compartment;

output door means for draining washing solution from said input compartment whereby to control liquid level;

float means coupled to said door means and disposed within said input compartment for operating said door means in response to the liquid level in said input compartment;

apertured, vertically upright barrier means disposed within said input compartment between said liquid inlet means and said float means for reducing liquid turbulence; and,

gas inlet means for admitting dirty gases to be cleaned into said input compartment;

an intermediate gas separation compartment defined interi-

orly of said enclosure adjacent said input compartment and between said first and second divider walls, said intermediate compartment including perforated plate means disposed substantially horizontally within said intermediate compartment for facilitating separation of particulate pollution and gases from liquid contacting said plate;

a liquid pathway between said first divider wall and said bottom for establishing fluid flow between said input compartment and said intermediate compartment;

a cleansed gas recovery compartment in fluid flow communication with said intermediate compartment and defined interiorly of said enclosure between said second divider wall and said second end wall, said recovery compartment including drain means provided in the floor of said enclosure for outputting wastes separated from escaping gases exteriorly of said enclosure; and

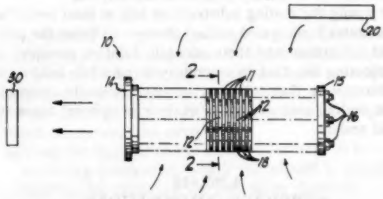
exhaust fan means connected to said cleansed gas compartment for drawing gases to be cleansed into and through said enclosure and through said washing solution to effectuate cleaning and for exhausting cleansed gases exteriorly of said system enclosure.

4,269,613

REUSABLE DISC FILTER WITH FOIL SPACERS FOR HIGH TEMPERATURE GASES

Richard J. Miko, Paramus, N.J., and Daniel H. Shapiro, Roslyn Heights, N.Y., assignors to Edo Corporation, College Point, N.Y.

Filed Mar. 14, 1979, Ser. No. 20,486
Int. Cl.³ B01D *46/40*
U.S. Cl. 55—278 **9 Claims**



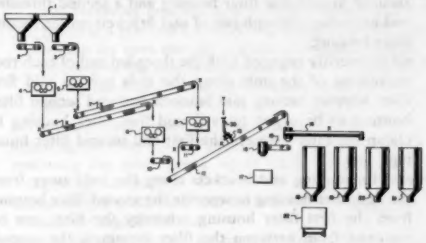
1. A hot gas filter to remove contaminants from a gas stream generated by a burning propellant and having a gas temperature in excess of 4500° F., the filter to be capable of surviving numerous exposures to the hot gas without damage and to be used in a system between the burning propellant and a movable member downstream of the filter to reliably prevent fouling of the downstream member after numerous exposures to the hot gas, said filter comprising: a plurality of axially-aligned flat discs; a plurality of axially aligned flat foil spacers; each disc being spaced from an adjacent disc by a foil spacer to establish filter gaps between the edges of the discs; a cap at one end of the aligned discs and spacers; a flange with an opening at the other end of the aligned discs and spacers; a plurality of studs attached to the cap and flange to hold the filter together, the studs passing through the respective discs and foil spacers to maintain their position in the filter; each disc having a plurality of flow openings in communication with the said filter gaps and aligned and in communication with the respective flow openings in the other discs; the flange opening overlapping at least a portion of each of the aligned flow openings in the discs; and the flat discs and spacers both being comprised of a metal capable of withstanding the high temperature gas without melting.

4,269,614

APPARATUS FOR CONTROLLING THE DISPERSION OF COAL FINES INTO THE ATMOSPHERE

Keith L. Shelstad, Gillette, Wyo., assignor to Sunoco Energy Development Co., Dallas, Tex.

Filed Jan. 25, 1980, Ser. No. 115,573
Int. Cl.³ B01D *46/42*
U.S. Cl. 55—385 R **2 Claims**



1. In a system for handling particulate matter which includes fines subject to undesirable airborne dispersion, which system includes a conveyor belt for transporting the particulate matter, apparatus for containing the fines, and hence limiting the airborne dispersion thereof, which includes:

(A) means for collecting the fines;

(B) a hollow plow-like member vertically suspended above the conveyor belt with its lower terminus being open and disposed proximate the conveyor belt surface, said plow-like member having a generally narrow V-shaped cross section and being oriented with its leading edge directed to intercept particulate matter carried by the conveyor belt, said plow-like member including outwardly flared side edges extending from said leading edge to effect a slight lifting of the particulate matter in the region of said flared edges; and

(C) means for introducing collected fines into the hollow interior of said plow-like member;

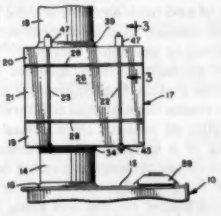
whereby the plow-like member temporarily folds back the particulate matter to permit insertion of the collected fines thereunder to effect containment thereof.

4,269,615

FILTER ASSEMBLY

Jon A. Zboralski; Richard C. Tringali, both of Manitowoc, and Harry N. Grow, Two Rivers, all of Wis., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Mar. 10, 1977, Ser. No. 776,135
Int. Cl.³ B01D *46/00*
U.S. Cl. 55—480 **4 Claims**



1. A filter assembly for filtering air comprising:

first and second spaced-apart filter housings, each of the filter housings having a side wall,

a filter removably positioned between the first and second filter housings, the filter including a side wall having first

and second peripheries, the first periphery of the side wall of the filter being sealingly engaged with the side wall of the first filter housing and the second periphery of the side wall of the filter being sealingly engaged with the side wall of the second filter housing,

a plurality of brackets mounted on said second filter housing,

a plurality of rigid rods extending between said first and second filter housings, each of said rods having a first end secured to said first filter housing and a second threaded end extending through one of said brackets on the second filter housing,

a nut threadedly engaged with the threaded end of each rod, movement of the nuts along the rods toward said first filter housing causing said brackets and said second filter housing to be urged toward said first filter housing to clamp the filter between the first and second filter housings, and

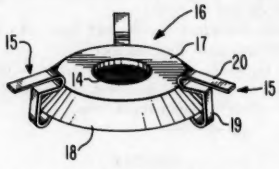
means for moving said brackets along the rods away from the first filter housing to separate the second filter housing from the first filter housing whereby the filter can be removed from between the filter housings, the second filter housing being connected to the first filter housing by the rigid rods and being supported by the rigid rods when the filter is removed, the rigid rods providing the sole connection between the filter housings when the filter is removed.

4,269,616

TEMPERATURE INSENSITIVE FILTER FOR KINESCOPE ENVELOPES

Emil V. Fitzke, Trenton; Donald B. Wenner, Hopewell, and Michael J. Polak, Trenton, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 13, 1980, Ser. No. 177,576
Int. Cl.³ B01D *46/10*; H01J *9/38*
U.S. Cl. 55—493 **9 Claims**



1. A filter for preventing the infiltration of airborne contaminants into a kinescope envelope, and envelope including a neck having a conical input section, said filter comprising:

an annular ring dimensioned and configured to sealably rest in said conical section, said ring having a sealing portion integral with a support portion, said sealing and support portions being angularly disposed so that said support portion lies substantially perpendicular to the longitudinal axis of said neck and said sealing portion rests against the inside surface of said conical section when said filter is disposed in said input section;

a fluid permeative filter member affixed to said support portion so that fluid ingressing and egressing said envelope passes through and is filtered by said member;

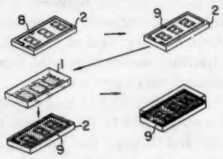
a plurality of resilient clips affixed to said ring, said clips being of a material which remains resilient through an approximate temperature range of 20° C. to 500° C., said clips being configured with a first folded portion and a second folded portion and being attached to said ring so that one side of said first folded portion extends in substantially the same direction as said sealing portion and the bight of said second folded portion presses against the outside of said conical section to resiliently retain said filter in said conical section when said filter is disposed in said input section.

4,269,617

PROCESS FOR THE MANUFACTURE OF LIQUID CRYSTAL DISPLAY ELEMENT

Yoshimichi Shibuya; Hiromitsu Kawamura; Yasuhiko Kando, and Masaharu Koyama, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 3, 1979, Ser. No. 35,529
Claims priority, application Japan, May 17, 1978, 53/57652
Int. Cl.³ C23C *27/00*
U.S. Cl. 65—43 **10 Claims**



1. A process for the manufacture of a liquid crystal container for a liquid crystal display element in which a pair of substrates, each provided with transparent electrode means and liquid crystal orientation control means on its inner face, are sealed at their peripheral areas while defining a predetermined gap therebetween, said process comprising the steps of:

applying a sealant to a predetermined zone of at least one of said substrates;

subjecting said at least one of said substrates having said sealant thereon to primary firing in an open condition, thereby fusing and fixedly depositing said sealant on said at least one of said substrates having said sealant thereon;

applying a relative-position holding material to at least a portion of at least one of said substrates such that, when said pair of substrates is properly positioned for sealing, said holding material is at a position external relative to said fused and fixedly deposited sealant; and

superposing the mating substrate on said at least one of said substrates having said sealant thereon to bring the pair of said substrates into their accurate relative positions and subjecting the stack to secondary firing while holding said substrates in that relation, thereby integrally assembling and sealing said substrates at their peripheral areas with said sealant.

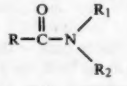
4,269,618

HERBICIDE COMPOSITIONS

Ferenc M. Pallos, Walnut Creek; Mervin E. Brokke, Moraga, and Duane R. Arneklev, Sunnyvale, all of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 208,041, Dec. 9, 1971, Pat. No. 4,137,070, which is a continuation-in-part of Ser. No. 134,868, Apr. 16, 1971, abandoned. This application Aug. 4, 1978, Ser. No. 930,967
Int. Cl.³ A01N *43/46, 37/02, 37/18*
U.S. Cl. 71—88 **50 Claims**

1. A herbicidal composition comprising an active thiolcarbamate herbicidal compound and an antidote therefor corresponding to the formula



wherein R is haloalkyl having from 1 to 6 carbon atoms, inclusive; R_1 and R_2 can be the same or different and can be selected from the group consisting of alkyl having 1 to 20 carbon atoms, inclusive; haloalkyl-N-alkylamido having 3 to 20 carbon atoms, inclusive; haloalkylamido having 2 to 20 carbon atoms, inclusive; haloalkylamidoalkyl having 4 to 20 carbon atoms,

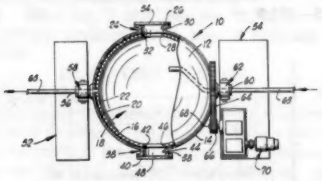
inclusive; haloalkyl-N-alkylamidoalkyl having 3 to 20 carbon atoms, inclusive; and haloalkylamidoalkenyl having 4 to 20 carbon atoms, inclusive; substituted phenylalkyl wherein said substituents can be selected from halophenoxyalkylamidoalkyl having 9 to 20 carbon atoms, inclusive; α-haloalkylamidophenylalkyl having 9 to 20 carbon atoms, inclusive; α-haloalkylamidonitrophenylalkyl having 9 to 20 carbon atoms, inclusive; α-haloalkylamidohalophenylalkyl having 9 to 20 carbon atoms, inclusive; provided only one of R_1 or R_2 is alkyl and; said compound being antidotally active with said thiolcarbamate herbicide compound and wherein said compound is present in an amount varying between about 0.0001 to 30 parts by weight for each part by weight of the active herbicidal compound.

4,269,619

ILMENITE BENEFICIATION PROCESS AND A DIGESTER METHOD

Howard R. Keil, and Oscar L. Daigle, both of Oklahoma City, Okla., assignors to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Filed May 14, 1976, Ser. No. 686,267
Int. Cl.[3] C22B 3/00, 3/02
U.S. Cl. 75—1 T **13 Claims**



1. A method for operating a digester movably mounted on mounting structures in a process for the beneficiation of titaniferous iron ores wherein the digester includes a nozzle having an opening covered via a removable cover, the opening being in fluidic communication with the interior of the digester, the method comprising the steps of:

moving the digester on the mounting structures to a material receiving position in which the nozzel is disposed in a position for receiving the ores to be digested;

removing the cover from the nozzle;

charging the ores into the interior of the digester via the opening in the nozzle;

connecting the cover to the nozzle;

introducing leach liquor into the interior of the digester;

digesting the ores in the digester;

removing the spent leach liquor from the digester after digesting of the ores;

introducing a wash fluid into the interior of the digester to wash the digested ores;

moving the digester on the mounting structures to a material discharge position without first discharging the wash fluid for discharging the digested ores and the wash fluid from the digester;

connecting a pump to the nozzle on the digester;

establishing fluidic communication between the interior of the digester and the pump; and

pumping the digested ores and the wash fluid from the digester via the pump.

6. A method for operating more than one movable digester in a process for the beneficiation of titaniferous iron ores wherein each digester is movably supported on mounting structures and wherein each digester includes a first nozzle having an opening in fluidic communication with the interior of the digester and a removable first cover for closing the opening in the first nozzle, and a second nozzle having an opening in fluidic communication with the interior of the digester and a discharge valve interposed in a discharge nozzle connected to the second nozzle, the method comprising the steps of:

charging each digester with ores, the charging of each digester including the steps of:

moving the digester on the mounting structures to a material receiving position in which the first nozzle is disposed in a position for receiving the ores to be digested;

charging the ores into the interior of the digester via the opening in the first nozzle; and

securing the first cover over the opening in the first nozzle;

introducing leach liquor into the interior of the digesters;

digesting the ores in the digesters;

removing the spent leach liquor from the digester after digesting the ores;

introducing a wash fluid into the interior of the digesters to wash the digested ores;

moving the digesters on the mounting structures to a material discharge position without first discharging the wash fluid in which the second nozzle is in position for discharging the digested ores and the wash fluid from the digesters after the completion of the digestion;

removing the digested ores and the wash fluid from the digesters via a digester discharge assembly, the removing of the ores and the wash fluid including the steps of:

connecting the digester discharge assembly to the discharge valve of one of the digesters after moving the digester to the material discharge position;

opening the discharge valve to establish fluidic communication between the interior of the digester and the digester discharge assembly;

discharging the digested ores and the wash fluid from the digester via the digester discharge assembly;

closing the discharge valve interrupting the fluidic communication between the digester and the digester discharge assembly;

disconnecting the digester discharge assembly from the discharge valve of the digester after the discharge of the ores and the wash fluid and after the closing of the discharge valve; and

moving the digester discharge assembly to each of the digesters and repeating the step of removing the digested ores and the wash fluid from each of the digesters as the digestion of ores is completed and the subsequent moving of the digesters on the mounting structures to the material discharge position.

4,269,620

PROCESS FOR THE PREPARATION OF SILICON OR FERROSILICON

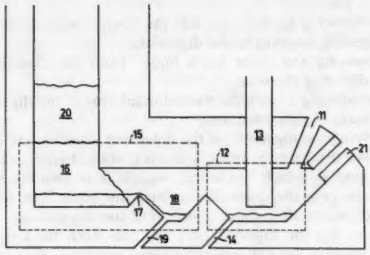
Thomas Johansson, Ljungaverk, Sweden, assignor to Kemanord AB, Stockholm, Sweden

Filed May 24, 1979, Ser. No. 41,910
Claims priority, application Sweden, Jun. 2, 1978, 7806524
Int. Cl.[3] C21C 5/52
U.S. Cl. 75—11 **8 Claims**

1. A process for the preparation of silicon or ferrosilicon by reduction of silicon oxide in the form of silicas or cation containing silicates and oxides, optionally in the presence of iron or iron oxide, by means of a carbonaceous reducing agent in a reaction zone, which reaction zone comprises a zone of energy supply and a zone of subsequent reaction, whereby at least energy and condensed phases from the zone of subsequent reaction are brought to the zone of energy supply while silicon product and a gas phase are leaving the zone of energy supply and whereby at least carbonaceous reducing agent and the gas

phase from the zone of energy supply are brought to the zone of subsequent reaction while a gas phase product and condensed phase are leaving the zone of subsequent reaction so that the gas phase product leaves the reaction zone and the condensed phases enter the zone of energy supply and whereby the silicon oxide is supplied in condensed form somewhere in the reaction zone or in gas phase to the zone of energy supply, comprising the steps of:

(a) supplying at least 33 percent of the silicon oxide directly into the zone of energy supply through a channel through the furnace wall, or a channel through the charge or a channel through the electrodes,



(b) controlling the supply rate of the silicon oxide to the zone of energy supply essentially continuously and in an adjustable way to make the consumption of the silicon oxide in the zone of energy supply independent of the charging of energy to the zone of energy supply so that the temperature in the zone of energy supply can be influenced, and

(c) regulating the supply rate of silicon oxide and the supply rate of energy to the zone of energy supply to give a high enough temperature in the zone of energy supply to give a content of silicon monoxide below 5 mole percent in the gas leaving the zone of subsequent reaction.

4,269,621

USE OF HEAVY METAL CHELATES OF 2-MERCAPTOPYRIDINE-N-OXIDE TO SEPARATE SELECTED PRECIOUS METALS FROM ACIDIC SOLUTIONS

Joseph R. Reiner, Northford, and Sigmund Breister, Hamden, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Jan. 24, 1980, Ser. No. 115,163
Int. Cl.³ C22B *11/04*
U.S. Cl. 75—101 BE **17 Claims**

1. A process for separating precious metals selected from the group consisting of gold, platinum, palladium, rhodium, iridium, osmium, and ruthenium from acidic solutions having a pH below about 3, which comprises the steps of:

(a) adding a sufficient amount of at least one heavy metal chelate of 2-mercaptopyridine-N-oxide, wherein said heavy metal chelates are selected from the group consisting of zinc, iron, copper, aluminum, mercury, lead, tin, and nickel, to said acidic solution to cause at least a portion of said precious metals in said acidic solution to transchelate with the heavy metal chelate of 2-mercaptopyridine-N-oxide and to form precipitates in said acidic solution; and

(b) separating said precipitated precious metal chelates of 2-mercaptopyridine-N-oxide from said acidic solution.

4,269,622

RECOVERY OF PRECIOUS METALS FROM DIFFICULT ORES

Bernard J. Kerley, Jr., Santo Tomas Rt. Box 73, Sahuarita, Ariz. 85629

Filed Dec. 28, 1979, Ser. No. 108,168
Int. Cl.³ C22B *11/04*
U.S. Cl. 75—103 **6 Claims**

1. In a method for the recovery of precious metals including gold and silver from an ore containing same, comprising lixiviating said precious metals from said ore using an ammonium thiosulfate liquor as the lixiviating agent in the presence of copper, followed by recovering said precious metals from said ammonium thiosulfate liquor, the improvement comprising:

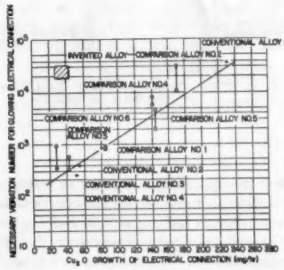
maintaining the pH of said liquor during lixiviation at a value of at least 7.5 with ammonia, and simultaneously maintaining a sulfite ion concentration of at least 0.05%.

4,269,623

COPPER ALLOY FOR RELIABLE ELECTRICAL CONNECTION

Sadao Inoue, Nikko; Tetsuya Umemura, Ichihara; Hiroshi Suzuki, and Takashi Kuroyanagi, both of Yokohama, all of Japan, assignors to Furukawa Metals Company, Ltd., Tokyo, Japan

Filed Sep. 19, 1979, Ser. No. 77,123
Claims priority, application Japan, Sep. 19, 1978, 53-114884
Int. Cl.³ C22C *9/00, 9/04*
U.S. Cl. 75—157.5 **2 Claims**



1. A copper alloy for giving a reliable connection in mechanical contact with an electric wire, which consists essentially of 0.5–3.0 wt.% of Fe, 0.3–0.8 wt.% of Zn, the balance consisting of Cu and impurities thereof.

4,269,624

METHOD FOR THE PRODUCTION OF NON-EVAPORABLE TERNARY GETTERING ALLOYS

Alessandro Figini, Milan, Italy, assignor to SAES Getters S.p.A., Milan, Italy

Filed Jan. 24, 1980, Ser. No. 115,050
Claims priority, application Italy, Feb. 5, 1979, 19902 A/79
Int. Cl.³ C22C *13/00*; F17C *11/00*
U.S. Cl. 75—177 **8 Claims**

1. A method for the production of non-evaporable ternary gettering alloys of the type $Zr\text{-}M_1\text{-}M_2$ in which M_1 is a metal chosen from the group comprising vanadium and niobium and in which M_2 is a metal chosen from the group comprising iron and nickel; said method comprising in sequence the steps of:

I. mixing zirconium and an alloy $M_1\text{-}M_2$ in air at atmospheric pressure and at room temperature to form a mixture; and then

II. melting the mixture under vacuum at a pressure of less than 10^{-2} torr or in an inert atmosphere at less than atmospheric pressure to form a ternary alloy; and then

III. cooling the ternary alloy to room temperature; and then

IV. grinding the ternary alloy to obtain a powder having a particle size less than 500μ.

4,269,625

BATH FOR ELECTROLESS DEPOSITING TIN ON SUBSTRATES

Arian Molenaar, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 13, 1979, Ser. No. 93,484

Claims priority, application Netherlands, Dec. 4, 1978, 7811816

Int. Cl.³ C23C 3/02

U.S. Cl. 106—1.22 6 Claims

1. A electroless tinplating bath for the electroless deposition of tin on a catalytic surface, said bath comprising an aqueous alkaline solution of at least 0.20 moles per liter of stannous ions, 0.005 to 0.03 mols per liter of stannic ions and at least 0.1 mols per liter of a reducing agent selected from the group consisting of hypophosphites and borazanes.

4,269,626

AQUEOUS ACID/AMINO 1,3-BUTADIENE POLYMER REACTION PRODUCT AGENT FOR TREATING WOOD AND WOODEN MATERIALS

Klaus Gorke, Haltern-Lavesum, and Wilfried Bartz, Marl, both of Fed. Rep. of Germany, assignors to Chemische Werke Heuls, A.G., Marl, Fed. Rep. of Germany

Filed Sep. 7, 1979, Ser. No. 73,396

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1978, 2838930

Int. Cl.³ C08D 5/14, 5/18

U.S. Cl. 106—18.32 4 Claims

1. An aqueous agent for treating wood and wooden materials, comprising an organic binder dryable by oxidation and consisting essentially of the reaction product of an acid and an amino group carrying 1,3-butadiene substrate polymer, wherein

(1) the amino group carrying 1,3-butadiene polymer has a double bond content corresponding to an iodine number of at least 200 g iodine/100 g, of which a double bond content of at least 100, measured as iodine number, is derived from cis-1,4-structural elements of the 1,3-butadiene substrate polymer per se;

(2) the amino group content of the amino group carrying 1,3-butadiene polymer is at least 50 mg-atoms of nitrogen/100 g of polymer; and

(3) the 1,3-butadiene substrate polymer per se has at least 70 molar percent butadiene units and a number average molecular weight of 500–6,000,

said reaction product being a water soluble or water dispersible salt.

4,269,627

WATERPROOF INFRARED ABSORPTIVE JET PRINTING INK

Ki-Sup Hwang, Xenia, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Jun. 29, 1979, Ser. No. 53,618

Int. Cl.³ C09D 11/00

U.S. Cl. 106—22 8 Claims

1. A jet printing ink which has high light absorptivity at infrared wavelengths and smear resistance after printing, is fast drying on paper and waterproof when dry comprising:

(a) as the dye component, a first water soluble dyestuff selected from the group consisting of Direct Black 19, Direct Black 22, and mixtures thereof; and a second water soluble dyestuff which is the thiosulfonic acid of 2,4-dinitrophenol;

(b) an alkaline agent which solubilizes the dye component and aids in its penetration of and fixation to paper comprising a compound having the formula R_3N, wherein R is a lower alkyl group, an aryl group, or hydrogen, with the proviso that not more than one R group can be hdyrogen;

(c) a humectant selected from the group consisting of water soluble lower alkylene glycols; and

(d) the balance water,

said formulation also having a resistivity below about 1000 ohm cm and a viscosity of 1–10 centipoise at 25° C.

4,269,628

COMPOSITIONS OF VERMICULITE LAMELLAE AND SOLID PARTICULATE MATERIALS

Denis G. H. Ballard, Littleton; William N. E. Meredith, Hoole, and Graham R. Rideal, Handbridge, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 13, 1979, Ser. No. 66,467

Claims priority, application United Kingdom, Aug. 17, 1978, 33723/78

Int. Cl.³ C04B 41/28

U.S. Cl. 106—86 15 Claims

1. A strong, dry, rigid foam article having a density of less than 500 kg/m³ and stable in water against disintegration when placed in water, said article consisting essentially of vermiculite lamellae and a compressive strength and water stability additive selected from the group consisting of magnesium oxide, magnesium hydroxide, calcium oxide and calcium hydroxide, said vermiculite lamellae being obtained from vermiculite which has been swollen by the action of aqueous salts and delaminated by mechanical shearing of the swollen granules to yield platelets having a thickness of less than one tenth of a micrometer.

9. A strong, dry article which is stable in water against disintegration when placed in water, said article consisting essentially of vermiculite lamellae and a strength and water stability additive selected from the group consisting of magnesium oxide, magnesium hydroxide, calcium oxide and calcium hydroxide said vermiculite lamellae being obtained from vermiculite which has been swollen by the action of aqueous salts and delaminated by mechanical shearing of the swollen granules to yield platelets having a thickness of less than one tenth of a micrometer.

4,269,629

STABILIZED CELLULOSE ESTER COMPOSITIONS

Joseph S. Zannucci, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

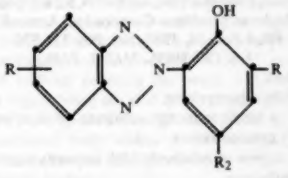
Continuation of Ser. No. 902,607, May 3, 1978, abandoned. This application Sep. 21, 1979, Ser. No. 77,875

Int. Cl.³ C08L 1/10

U.S. Cl. 106—176 13 Claims

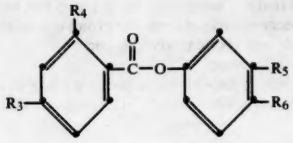
1. A cellulose ester plastic composition containing a stabilizing amount of the combination of

(A) at least one hydroxybenzotriazole compound having the formula



wherein R is selected from the group consisting of a halogen, hydrogen, a hydroxy group, an alkyl radical or an acyl radical, and R_1 and R_2 are selected from the group consisting of hydrogen or a branched or unbranched alkyl radical containing 1 to 12 carbon atoms, an acyl radical and hydrogen;

(B) at least one phenylbenzoate having the formula:



wherein R_3 and R_6 are hydrogen, alkoxy group containing 1 to 12 carbon atoms, or branched or unbranched alkyl group containing 1 to 12 carbon atoms; and at least one of R_5 and R_4 is hydroxyl and the other is hydrogen; and

(C) at least one conventional hindered phenolic antioxidant.

4,269,630

TWO-STEP PROCESS AND COMPOSITION FOR CLEANING POLISHED SURFACES

George M. Stephenson, 190 Chestnut Ridge, Bethel, Conn. 06801, and William Colucci, Danbury, Conn., assignors to George M. Stephenson, Bethel, Conn.

Filed Oct. 1, 1979, Ser. No. 80,588
Int. Cl.³ B08B *3/08*
U.S. Cl. 134—26 **8 Claims**

3. A process for cleaning highly-polished surfaces with a cleaner composition comprised of two different portions, which comprises:

(a) applying to the surface to be cleaned a first portion of the cleaner comprising, on a weight basis, from about 50 to 65% 1,1,2-trichloro-1,2,2-trifluoroethane, from about 25 to 35% isopropyl alcohol, from about 1 to 5% dimethylformamide, and from about 5 to 15% 2-ethoxyethanol; then,

(b) while the surface is still wet with said first portion, rinsing the surface with a second portion of the cleaner composition which comprises, on a weight basis, at least about 85% 1,1,2-trichloro-1,2,2-trifluoroethane which contains less than 10 ppm of non-volatile residues; and then

(c) permitting the surface to dry.

4,269,631

SELECTIVE EPITAXY METHOD USING LASER ANNEALING FOR MAKING FILAMENTARY TRANSISTORS

Narasipur G. Anantha, Hopewell Junction, and Gurumakonda R. Srinivasan, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 14, 1980, Ser. No. 111,570
Int. Cl.³ H01L *21/263, 7/36*
U.S. Cl. 148—1.5 **11 Claims**

1. The method comprising

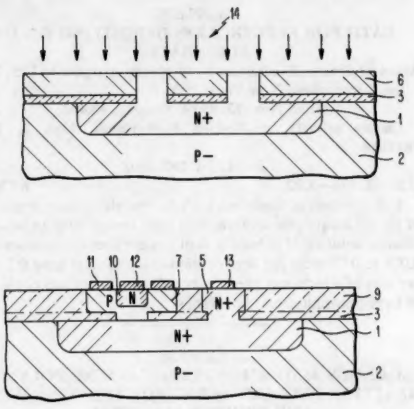
providing a semiconductor substrate of a relatively low impurity concentration,

forming a region of relatively high impurity concentrantion in said substrate,

forming a masking layer on said substrate, said layer being apertured over a portion of said region

depositing polycrystalline silicon of a relatively low impurity concentration on said layer and said substrate, and

subjecting said polycrystalline silicon to laser radiation, the radiation from said laser interacting with said relatively high impurity concentration region in said substrate to melt and regrow said polycrystalline silicon selectively and thereby to convert said polycrystalline silicon substantially only over said portion of said region into epitaxial monocrystalline silicon.

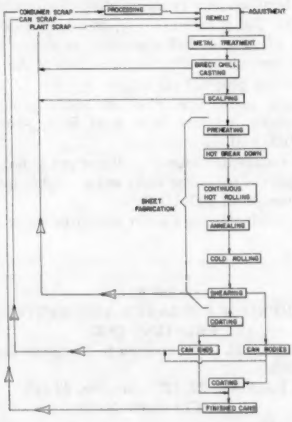


4,269,632

FABRICATION OF ALUMINUM ALLOY SHEET FROM SCRAP ALUMINUM FOR CONTAINER COMPONENTS

King G. Robertson, and Donald C. McAuliffe, both of Golden, Colo., assignors to Coors Container Company, Golden, Colo.

Filed Aug. 4, 1978, Ser. No. 931,040
Int. Cl.³ C22F *1/04*
U.S. Cl. 148—2 **14 Claims**



1. A process of fabricating aluminum sheet for aluminum containers comprising:

(a) providing an aluminum alloy consisting esentially of magnesium 0.4–1.0%; magnesium 1.3–2.5%, said manganese and magnesium being present in a total concentration of 2.0–3.3% and in a ratio of magnesium to manganese of between 1.4:1 and 4.4:1; silicon 0.15–1.0%; iron 0.1–0.9%; and copper 0.05–0.4%;

(b) casting said alloy at 700°–750° C. into an ingot;

(c) preheating said ingot to 550°–600° C.;

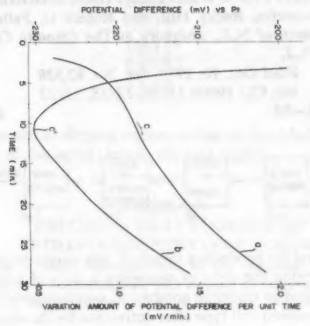
(d) hot rolling, between 450° C. and 510° C., said ingot to a slab;
(e) immediately continuously hot rolling said slab to a strip of cold rolling gauge; and
(f) cold rolling said strip of cold rolling gauge to at least 40% reduction to form cold rolled sheet which then has properties required for manufacturing the cold rolled sheet into a container component.

4,269,633

METHOD FOR COLORING STAINLESS STEEL

Takeshi Takeuchi; Hisao Takamura; Kiyoshi Takatsu, and Hidehiro Shibata, all of Ichikawa, Japan, assignors to Nisshin Steel Co., Ltd., Tokyo, Japan

Filed Mar. 6, 1980, Ser. No. 127,978
Claims priority, application Japan, Mar. 20, 1979, 54-31786
Int. Cl.[3] C23F *5/02, 7/00*
U.S. Cl. 148—6.21 3 Claims



1. A method for coloring stainless steel by controlling the potential difference between the surface of the stainless steel being colored and a reference electrode in a coloring liquor, characterized by differentiating a potential-time curve showing the variation with time of the potential difference between the surface of the stainless steel and the reference electrode by time to prepare the differentiation curve thereof and removing the stainless steel from the coloring liquor when the potential difference has changed from the coloring starting point that is the inflexion point on this differentiation curve, at which the variation amount of the potential per unit time changes from a falling tendency to a rising tendency, by a predetermined amount associated with the desired color.

4,269,634

LOSS REDUCTION IN ORIENTED IRON-BASE ALLOYS CONTAINING SULFUR

Karl Foster, Forest Hills Boro, and Jack W. Shilling, Murrysville Boro, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 4, 1979, Ser. No. 100,089
Int. Cl.[3] H01F *1/00*
U.S. Cl. 148—120 5 Claims

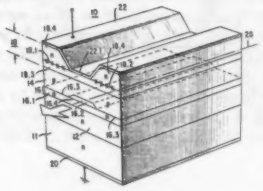
1. In a process for producing primary recrystallized iron having a cube-on-edge orientation of the type of which utilizes preparing an ingot alloy, hot working said alloy, working said alloy to final thickness, and final annealing at a temperature between about 800° and 950° C., the improvement which comprises:
(a) preparing an ingot alloy consisting essentially of 0.01–0.15% manganese, more than 50 ppm but less than about 250 ppm sulfur, 0.1–2.0% silicon, up to 2% chromium, up to 6% cobalt, up to 0.03% carbon, with the remainder being iron and incidental impurities;
(b) fusing on the surface of the final annealed alloy a coating of glass having a coefficient of thermal expansion of less than about 8.5×10^{-6} inches per inch per degree centigrade to affect a tensile stress on the material at least 200 psi by heating to a temperature of at least 700° C., but less than the temperature at which said alloy was final annealed.

4,269,635

STRIP BURIED HETEROSTRUCTURE LASER

Ralph A. Logan, Morristown, and Won-Tien Tsang, New Providence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 865,237, Dec. 28, 1977, Pat. No. 4,190,813.
This application Sep. 5, 1979, Ser. No. 72,591
Int. Cl.[3] H01L *21/208*
U.S. Cl. 148—171 9 Claims



2. A method of fabricating a semiconductor device having an active region therein comprising the steps of:
epitaxially growing on a semiconductor body a first layer from which said active region of a predetermined geometry is to be formed,
protecting the top surface of said first layer from the introduction of defects therein during subsequent processing by epitaxially growing a thin second layer thereon which can be selectively etched in the presence of said first layer,
masking said second layer to define said geometry,
selectively etching away said second layer in the mask openings to expose the underlying first layer, and
removing at least a portion of said first layer to effect said geometry.

4,269,636

METHOD OF FABRICATING SELF-ALIGNED BIPOLAR TRANSISTOR PROCESS AND DEVICE UTILIZING ETCHING AND SELF-ALIGNED MASKING

Anthony L. Rivoli, Palm Bay; William R. Morcom, Melbourne Beach; Hugh C. Nicolay, Melbourne Village, and Eugene R. Cox, Palm Bay, all of Fla., assignors to Harris Corporation, Melbourne, Fla.A

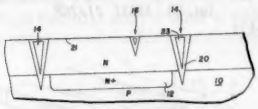
Filed Dec. 29, 1978, Ser. No. 974,478
Int. Cl.[3] H01L *21/20, 21/306*
U.S. Cl. 148—175 10 Claims

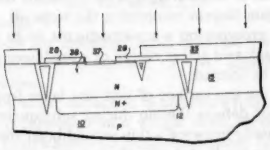
1. A method for forming circuit devices in a semiconductor body having a planar surface, which comprises:
forming first and second grooves through said planar surface of the semiconductor body to a depth below the region in said semiconductor body wherein a circuit device is to be formed without severing the semiconductor body, the device region being situated between said pair of grooves;
forming a third groove through said planar surface of the semiconductor body within the device region to a depth such that the bottom of said second grooves remain within said device region;
filling said grooves with dielectric material to form lateral dielectric isolation regions;
forming an oxidation inhibiting layer on said planar surface over said device region and overlapping at least a portion of each of said first and second grooves;
removing portions of said oxidation inhibiting layer to expose selected areas of said device region which areas do

not include contact regions of active regions of the device being formed;

selectively providing a first dopant through said oxidation inhibiting layer to form a first active region self-aligned between said first groove and said third groove;

thermally oxidizing said semiconductor body to diffuse said first dopant into said first active region while forming a thick oxide layer on said planar surface in areas not protected by said oxidation inhibiting layer with openings for contact regions of the device being formed;

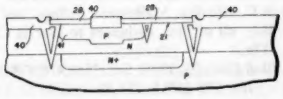




selectively providing a second dopant through said oxidation inhibiting layer to form a first contact region self-aligned between said second groove and said third groove and a second active region between said third groove and a portion of said thick oxide layer over a portion of said first active region;

diffusing said second dopant to form said first contact region and said second active region self-aligned to said second and third grooves; and

removing said oxidation inhibiting layer to expose contact areas to said first and second active regions and said first contact region.



4,269,637

HIGH-PERFORMANCE MHD SOLID GAS GENERATOR

Joseph E. Flanagan, Woodland Hills, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 19, 1979, Ser. No. 58,643

Int. Cl.³ C06B *45/10*

U.S. Cl. 149—19.1 **6 Claims**

1. A solid propellant electron-producing gas generator, which comprises:

a dialkali tetranitroethane salt selected from the group consisting of potassium tetranitroethane, cesium tetranitroethane, and mixtures thereof;

a halogen free energetic binder system; and

a metallic fuel selected from the group consisting of aluminum, zirconium, boron, and mixtures thereof.

4,269,638

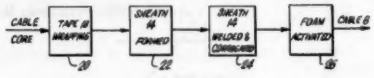
METHOD OF MANUFACTURING A SEALED CABLE EMPLOYING A WRAPPED FOAM BARRIER

John G. Faranetta, Rocky Hill, and Robert G. Feller, West Milford, both of N.J., assignors to The Okonite Company, Ramsey, N.J.

Filed Oct. 10, 1979, Ser. No. 83,538

Int. Cl.³ H01B *13/08, 13/18, 13/22*

U.S. Cl. 156—53 **4 Claims**



1. A method for producing sheathed, non-vapor propagating cable comprising the steps of wrapping a strip of a foamable material around an insulated conductor, said foamable material being of the closed cell type after activation by the application of heat; forming an outer metal sheath about said insulated conductor and said foam; corrugating said outer metal sheath and applying heat to activate said foam able material and seal the space between said insulated conductor and said outer metal sheath.

4,269,639

MANUFACTURE OF MINERAL INSULATED CABLES

Robert J. Lewis, Manchester, England

Filed Jan. 30, 1980, Ser. No. 117,010

Claims priority, application United Kingdom, Feb. 8, 1979, 7904410

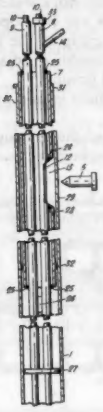
Int. Cl.³ H01B *13/06, 13/22*

U.S. Cl. 156—54 **10 Claims**

1. A process for the manufacture of mineral insulated electric cable which comprises continuously forming a sheath from travelling metal strip, by bending the strip into tubular form and seam welding the abutting edges of the bent strip together, while the said edges and travelling along a predetermined path, and simultaneously introducing powdered insulating material and at least one conductor wire into the sheath so formed, and then passing the resulting assembly through a series of reduction means to compact the insulant powder and to reduce the diameter of the sheath, each reduction step being followed by annealing and quenching, wherein a said conductor wire is introduced into the sheath by being passed through a guide tube extending into the sheath to a point beyond the region in which said welding is effected, which guide tube has an aperture in its wall located adjacent to the path of travel of the said edges in the said region, and wherein the assembly of said conductor wire and guide tube and the insulant powder is so arranged within the bent sheath-forming metal strip that the powder is excluded from the said welding region and that the said conductor wire is directly exposed, through said aperture, to heat generated by the welding operation.

4. A process according to claim 1, wherein a continuous stream of rare gas is delivered to the interior surface of the

sheath-forming metal strip in the vicinity of the said welding region, and is released through a gap between the edges of the



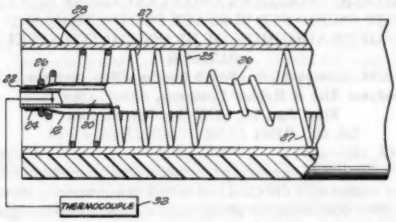
strip adjacent to the said region, so that air is excluded from the surfaces of the metal strip in the said region.

4,269,640

PRECISION HEAT FORMING OF TETRAFLUOROETHYLENE TUBING

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; W. V. Ruiz, Yorba Linda, and C. S. Thatcher, Fullerton, both of Calif.

Filed Jan. 18, 1980, Ser. No. 113,015
Int. Cl.³ B29C *27/12*
U.S. Cl. 156—84 **4 Claims**



1. A method for altering the size of tetrafluoroethylene tubing without splitting comprises the steps of:

(a) sliding tetrafluoroethylene tubing onto an aluminum mandrel and clamping the ends of the tubing to the mandrel;

(b) inserting said tetrafluoroethylene tubing on said aluminum mandrel into a supporting coil;

(c) inserting said coil with said tetrafluoroethylene tubing on said aluminum mandrel into an insulated steel pipe forming an assembly;

(d) heating said assembly in an oven to a temperature in the range of approximately 330 to 354 degrees celsius for approximately 15 to 30 minutes to shrink said tetrafluoroethylene tubing to the size of said aluminum mandrels;

(e) removing said tetrafluoroethylene tubing and aluminum mandrel and said coil from said pipe and allowing the tetrafluoroethylene tubing to cool slowly; and

(f) removing said tetrafluoroethylene tubing from said mandrel.

4,269,641

METHOD FOR ADHESION OF CERAMICS

Yoshihiro Ebata, Kawanishi; Yasuo Toibana, Ikeda; Tsuneo Uetsuki, Kawanishi; Saburo Kose, and Makoto Kinoshita, both of Ikeda, all of Japan, assignors to Agency of Industrial Science and Technology and Ministry of International Trade and Industry, both of Tokyo, Japan

Filed Oct. 11, 1979, Ser. No. 87,064
Claims priority, application Japan, Nov. 10, 1978, 53-138991; Dec. 1, 1978, 53-149421
Int. Cl.³ C04B *39/12*
U.S. Cl. 156—89 **3 Claims**

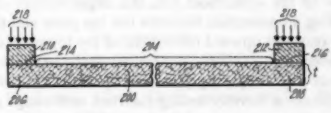
1. A method for the adhesion of a ceramic article to an article of metallic copper, which comprises adding a binder to a powder mixture of CuS—$LaCrO_3$—SiO_2, wherein the proportion of CuS to $LaCrO_3$—SiO_2 is in the range of from 80:20 to 90:10 by weight and the proportion of $LaCrO_3$ to SiO_2 is in the range of from 25:75 to 50:50 by weight, to convert the powder mixture to a paste, coating a surface of the ceramic article with the paste, placing the article of metallic copper in contact with the coated surface of the ceramic article, and heating the pair of articles in the resultant state of fast contact in an oxidizing atmosphere at a temperature in the range of from 1000° to 1200° C. for a period of from 10 to 20 minutes.

4,269,642

METHOD OF FORMING DENSIFIED EDGE SEALS FOR FUEL CELL COMPONENTS

Anthony J. DeCasperis, South Windsor; Richard J. Roethlein, Stafford Springs, and Richard D. Breault, Coventry, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 29, 1979, Ser. No. 88,993
Int. Cl.³ H01M *2/00, 4/88*; B29C *25/00*; C01B *31/00*
U.S. Cl. 156—89 **13 Claims**



1. In a process for fabricating a fuel cell component comprising a fully graphitized gas porous, resin bonded carbon fiber sheet having first and second oppositely facing surfaces and a pair of parallel edge portions separated by a central portion, wherein said edge portions are more dense than said central portion, the steps of:

forming an intermediate product comprising a homogeneous layer of carbon fibers and thermosetting resin, wherein the resin in said intermediate product has not been thermoset, said intermediate product including a pair of parallel edge portions separated by a central portion, said step of forming including building up the thickness of said edge portions such that they are thicker than said central portion with a material having substantially the same composition as said central portion;

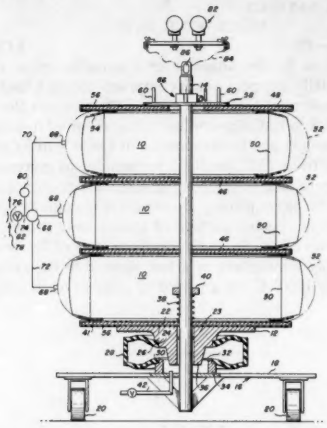
densifying at least said edge portions by compressing said edge portions to a thickness which is substantially the same as the desired final thickness of said central portion, said step of densifying including applying heat to cure said resin; and

heating said edge portions and said central portion to carbonize said resin and fully graphitize said resin and carbon fibers.

4,269,643
RETREADING STACKED TIRES USING INFLATABLE PRESSURE MEMBER

Donaldee Brewer, and Michael J. Dundon, both of Muscatine, Iowa, assignors to Bandag Incorporated, Muscatine, Iowa

Filed Jan. 29, 1979, Ser. No. 7,564
Int. Cl.[3] B29H *17/36*
U.S. Cl. 156—96 21 Claims



1. A method of preparing tires for retreading by applying to the periphery of each tire a precured tread strip with a vulcanizable bonding medium disposed between the tire periphery and the tread strip; applying an annular U-shaped envelope to the periphery of each tire so that the edge portions of the envelope overlie the rim or shoulder portion of the tire; stacking the tires vertically on a support with a plate disposed between each two adjacent tires, the plates engaging the edge portion of the envelopes; placing a top plate on the upper surface of the uppermost tire, the improvement comprising: providing a connection between the top plate and the support which restrains upward movement of the top plate connecting a pneumatically powered device between the support and the top plate and supplying pneumatic pressure thereto to compress the stack thereby sealing each tire to the edge portions of its respective envelope; while the stack is compressed, exhausting air from the space between each tire and the inner surface of its respective envelope; and placing the assembly of stacked tires and plates in an autoclave and supplying heat to the autoclave while maintining pressure in the pneumatically powered tension means.

4,269,644
COLD RECAPPING METHOD FOR TIRES

Leon C. Goldstein, Atlanta, Ga., assignor to Prior Tire Enterprises Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 859,239, Dec. 9, 1977, abandoned. This application Dec. 12, 1979, Ser. No. 102,960
Int. Cl.[3] B29H *17/36*
U.S. Cl. 156—96 4 Claims

1. A cold tire recapping method utilizing a precured tread strip and a rubber bonding composition between the strip and the prepared tire carcass comprising the steps of:

enclosing a flexible envelope around each of a group of tires which have bonding composition and a precured tread strip thereon;

inflating each tire of said group to a low pressure to assume the tire's normal shape within the envelope;

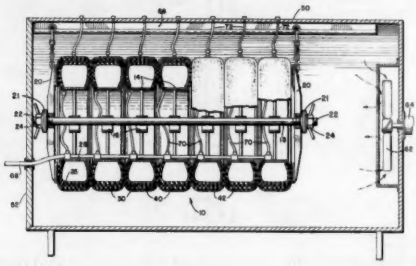
assembling said group of tires with their axes of rotation substantially aligned so that sidewalls of adjacent tires within said group sealingly press contiguous walls of envelopes thereon toward each other;

applying a controlled axial pressure against the ends of the assembled group to establish a sealed relationship between adjacent tire sidewalls and envelopes within said group;

holding the assembled group so the tires will not move to break this sealed relationship of adjacent tire sidewalls and envelopes within said group;

placing the tires while held in said group within a heating chamber;

venting the space between the envelope and tire of each tire in said group to atmospheric pressure;



inflating each tire to a relatively high pressure while continuing to hold the tires and envelopes in sealed relation in said group and while maintaining a substantially constant axial pressure on the tires to avoid excess outward expansion at the center of the tread of each tire;

pressurizing the chamber to a pressure somewhat lower than the pressure within each tire; and

heating the interior of the chamber to a temperature not exceeding 212° F. to cure the rubber bonding composition between the precured tread strip and the tire carcass.

4,269,645
AROMATIC TRIAZOLES AND ALKYLAMINE BORATES FOR INCREASED SURFACE PROTECTION AND IMPROVED ADHESION OF BRASS-COATED STEEL TO RUBBER

Robert M. Shemenski, Sr., North Canton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 14, 1975, Ser. No. 567,586
Int. Cl.[3] B29H *17/08, 17/10, 17/18, 17/20*
U.S. Cl. 156—124 6 Claims

1. A method of improving the vulcanized adhesion between a brass coated steel tire cord and rubber in a composite thereof, the rubber containing an amine resin capable of releasing ammonia comprising (A) treating the steel tire cord with benzotriazole and cyclohexylamine borate, and (B) preparing a composite of the treated steel tire cord with the rubber.

4,269,646
METHOD OF MAKING A BELTED TIRE

Rickie L. Miller, Houston, Tex., and Noel E. Walters, Tallmadge, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 782,214, Mar. 28, 1977, abandoned. This application Jan. 11, 1979, Ser. No. 2,521
Int. Cl.[3] B29H *17/14, 17/26*
U.S. Cl. 156—128 N 8 Claims

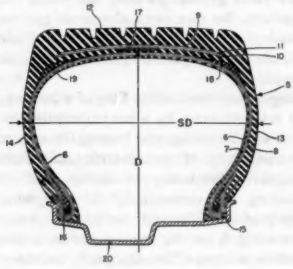
1. A method of making an annular belted tire with a tire casing having a first predetermined diameter at the centerplane and a second predetermined diameter at the shoulders, said tire being rotatable about an axis of the tire and comprising:

(a) building a beltless tire casing including

(I) at least one carcass ply reinforced with cords, and

(II) at least one pair of axially spaced substantially inextensible beads;

(b) molding and vulcanizing said tire casing with a peripheral surface having a transverse contour with said first predetermined diameter at the centerplane and said second predetermined diameter at the shoulders;
(c) mounting said beads on ring members movable axially to increase or decrease the distance between said rings;
(d) shaping said casing by inflation of said casing and by axial movement of said ring members to provide said first predetermined diameter at the centerplane of said casing;
(e) wrapping circumferentially around said outer peripheral surface a narrow, substantially inextensible restrictor band after said first predetermined diameter is obtained;
(f) supporting said casing at least at said centerplane by applying a radially outward circumferentially distributed force through inflation of said casing sufficient for stitching said restrictor band on said casing;



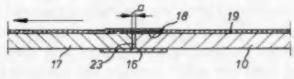
(g) further shaping said tire casing by continued inflation of said tire casing and axial movement of said ring members together to reduce the distance between said rings and radially expand the shoulders of said tire casing to said second predetermined diameter;
(h) wrapping plies of an unvulcanized belt structure around said outer peripheral surface after said shoulders of said tire casing have been expanded to said second predetermined diameter of said shoulders;
(i) wrapping an open-ended tread member around said belt structure; and
(j) vulcanizing said belt structure and any other unvulcanized components of the assembly of said tire casing, belt structure and tread with said tire casing having said transverse contour.

4,269,647

METHOD FOR THE CONTINUOUS COATING OF WEBS HAVING SPLICED JOINTS

Paul A. Verkinderen, Edegem; Ludovicus H. Verhoeven, Zoersel; Lucien A. Christiaen, Wilrijk; Camille F. Pira, Edegem, and Michel L. Marckx, Mortsel, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Oct. 10, 1978, Ser. No. 949,434
Claims priority, application United Kingdom, Oct. 12, 1977, 42509/77
Int. Cl.³ B31F *5/00*; B65H *19/00, 69/02*
U.S. Cl. 156—157 **6 Claims**



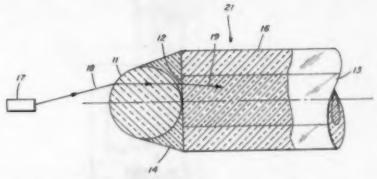
1. Method for the continuous coating of a moving web with a layer of an aqueous solution of hydrophilic colloid, wherein disturbances in the layer of said aqueous solution downstream of a spliced joint in the web are reduced which comprises the steps of butt-joining the web ends to each other by means of a splicing tape over the back sides of the web edges proximate the splice and applying to the butt-joint area at the front sides of the webs a hydrophobic coating prior to applying the layer of aqueous colloid solution.

4,269,648

METHOD FOR MOUNTING MICROSPHERE COUPLING LENSES ON OPTICAL FIBERS

Mark L. Dakss, Sudbury; Bumman Kim, Burlington, and John Schlafer, Wayland, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 10, 1980, Ser. No. 128,777
Int. Cl.³ G02B *5/14*
U.S. Cl. 156—293 **11 Claims**



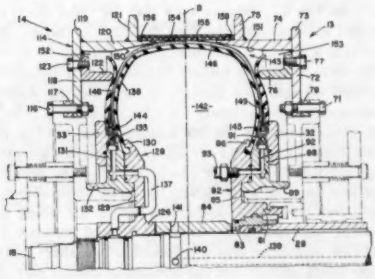
1. A method for mounting a microsphere bead coupling lens on an end of an optical fiber comprising
applying an adhesive to said end;
approximately centering the applied adhesive end of said optical fiber over the bead to be mounted;
lowering said fiber until the adhesive on said end contacts said bead; and
raising said fiber, whereby
the adhesive on said end holds onto said bead by surface tension so that said bead gets picked up as said fiber is raised, and
due to the combination of surface tension and gravity, said bead lens is moved by said adhesive until said lens is aligned with, or very close to, the central axis of said fiber.

4,269,649

SECOND STAGE TIRE BUILDING DRUM AND METHOD FOR THE OPERATION THEREOF

Robert S. Vanderzee, Akron, Ohio, assignor to The Steelastic Company, Akron, Ohio

Filed Dec. 18, 1978, Ser. No. 970,665
Int. Cl.³ B29H *17/26*
U.S. Cl. 156—416 **7 Claims**



1. A second stage building drum assembly mounted for the application of belts and the like to a tire carcass, comprising:
a drive shaft;
a first ring support member secured to said drive shaft;

a second ring support member carried on said shaft and movable longitudinally thereon;

a drum spacer interposed between said first and second ring support members;

a drum supported between said first and second ring support members;

means to move said second ring support member longitudinally away from said first ring support member to dispose said drum in cylindroidal configuration for mounting and removing a tire carcass;

means to move said second ring support member longitudinally toward said first ring support member, as limited by the interposition of said drum spacer, toroidally to shape a tire carcass mounted thereon.

4,269,650

TRANSFER PRINTING APPARATUS

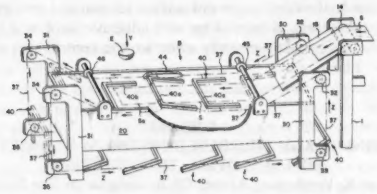
Eisuke Arai, Koganei; Kuniaki Kamei, Kodaira; Akio Kawasaki, Urawa; Fumio Takagi; Koichi Shirai, both of Tokyo, and Yasuharu Orihara, Urawa, all of Japan, assignors to Dai Nippon Insatsu K.K., Tokyo, Japan

Division of Ser. No. 924,853, Jul. 17, 1978, Pat. No. 4,229,239. This application Apr. 23, 1980, Ser. No. 143,037

Claims priority, application Japan, Jul. 27, 1977, 52-90049; Aug. 17, 1977, 52-98482; Jan. 24, 1978, 53-6317

Int. Cl.[3] B32B *31/12;* B44C *1/16*

U.S. Cl. 156—540 21 Claims



1. A transfer printing apparatus comprising: means forming a free surface of a liquid; means for placing on said free surface a printing pattern support sheet made up of a film soluble in said liquid and a pre-printed pattern supported on one surface of said film in a manner such that the sheet floats on the free liquid surface with the film directly contacting the surface; solvent applying means associated with said means for placing the sheet to apply a solvent to said pattern, before the sheet is placed on said free surface, to activate the pattern into an adherent condition ready for transfer printing, whereby as the sheet is floating on the free liquid surface, the film dissolves in the liquid to leave on the liquid surface the activated pattern against which an article can be forced to be printed with the pattern thereon; sheet raising means movable above and below said free surface of liquid; and means for lifting said raising means; said raising means being located between a first part, against which the article is forced, of the sheet floating on the free liquid surface and the remaining second part of the same whereby when the raising means is moved above the surface of liquid, the second part of the sheet is isolated from the first part of the sheet to prevent influence of disturbance of the pattern, in the first part, due to the transfer printing on the second part of the sheet.

4,269,651

PROCESS FOR PREPARING TEMPERATURE-STABILIZED LOW-LOSS FERRITE FILMS

Howard L. Glass, Orange, and Rodney D. Henry, Saratoga, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 918,298, Jun. 22, 1978. This application Feb. 4, 1980, Ser. No. 118,269

Int. Cl.[3] C30B *19/02*

U.S. Cl. 156—601 6 Claims

1. A method of forming a composite structure exhibiting loss loss microwave or millimeter-wave ferromagnetic resonance, said method comprising the steps of:

(a) providing a single-crystal substrate, wherein said substrate is of a material selected from the group consisting of the rare-earth gallium garnets, the mixed rare-earth gallium garnets, the rare-earth aluminum garnets, the mixed rare-earth aluminum garnets, magnesium oxide, the gallate spinels, the indium-gallate spinels, the aluminate spinels, and sapphire;

(b) forming a monocrystalline film of a ferrimagnetic material on said substrate by a controlled deposition process wherein said ferrimagnetic material is selected from the group consisting of garnet-structured ferrites, spinel-structured ferrites, hexagonal ferrites, and orthoferrites;

(c) measuring the variation of ferromagnetic resonance frequency of said film with variations in temperature;

(d) determining from the measurements a temperature at which the variation of ferromagnetic resonance frequency exhibits an ordinary extremum;

(e) varying parameters of said controlled deposition process and repeating steps (a) through (d) until said temperature at which the variation of ferromagnetic resonance frequency exhibits an ordinary extremum is substantially the same as a preselected temperature.

4,269,652

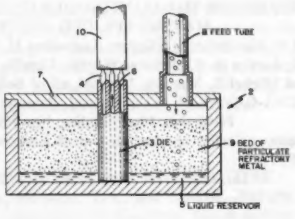
METHOD FOR GROWING CRYSTALLINE MATERIALS

Paul J. Yancey, Matthews, N.C., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Nov. 6, 1978, Ser. No. 958,089

Int. Cl.[3] C30B *15/14*

U.S. Cl. 156—607 11 Claims



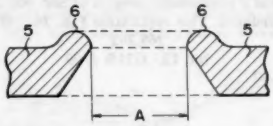
1. In the method of growing crystalline material from a melt comprising providing and maintaining a liquid reservoir supply of said material by feeding a supply of said material in solid form to said reservoir while melting the contents of the reservoir to form a liquid material, contacting a seed with said liquid material and causing said liquid material to solidify on said seed; the improvement which comprises feeding the supply of solid material onto a stationary bed of particulate refractory metal which is in communication with said reservoir whereby said solid material melts in contact with said bed to provide and maintain said liquid reservoir supply.

4,269,653

APERTURE STOP

Hirotsugu Wada, Machida, and Toshiaki Shinozaki, Yokohama, both of Japan, assignors to VLSI Technology Research Association, Japan

Filed Nov. 5, 1979, Ser. No. 91,037
Claims priority, application Japan, Nov. 6, 1978, 53-136483
Int. Cl.[3] B23P *15/16*
U.S. Cl. 156—644 4 Claims



1. A method of manufacturing an aperture stop with a rectangular aperture for an electron beam exposure device, comprising the steps of:

(a) preparing a single-crystal silicon substrate with one side having a (100) face;

(b) providing a mask on said side of the substrate;

(c) selectively etching the substrate through the mask from said side to form a projecting portion of rectangular cross section by anisotropic etching;

(d) forming an aperture layer on said one side of the etched substrate surrounding said projecting portion, said layer being comprised of a high-melting-point metal having good electric conductivity; and

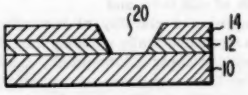
(e) forming in said aperture layer a rectangular aperture with a cross section corresponding to the cross section of said projecting portion by removing said substrate from the aperture layer.

4,269,654

SILICON NITRIDE AND SILICON OXIDE ETCHANT

Cheryl A. Deckert, Lawrenceville, N.J., and George L. Schnable, Lansdale, Pa., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 852,932, Nov. 18, 1977, abandoned.
This application May 9, 1979, Ser. No. 37,378
Int. Cl.[3] H01L *21/312*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—657 7 Claims



1. An etchant solution for the concurrent etching of both silicon oxide and silicon nitride layers that etches silicon nitride at a rate faster than silicon oxide to produce openings in said layers having a tapered wall configuration which comprises concentrated aqueous hydrogen fluoride in a high boiling organic solvent, that is miscible with water and compatible with hydrogen fluoride, and which is maintained at a temperature of between about 80° C. and about 120° C.

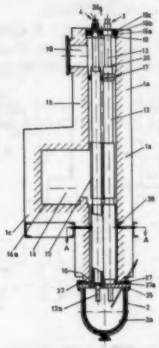
5. A method of etching composite structures of silicon nitride on silicon oxide on a silicon substrate that etches the silicon nitride at a rate faster than the silicon oxide to produce openings having a tapered wall configuration which comprises immersing the structure in an etchant solution of concentrated aqueous hydrogen fluoride in a high boiling organic solvent that is miscible with water and compatible with hydrogen fluoride at a temperature of at least about 80° C. for a time sufficient to etch through to the silicon substrate.

4,269,655

DEVICE FOR CONCENTRATION OF MINERAL ACIDS, PARTICULARLY SULPHURIC ACID

Hans Broberg; Lars Douren, both of Karlskoga, and John Troeng, Lund, all of Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Filed May 21, 1979, Ser. No. 41,220
Claims priority, application Sweden, Jun. 21, 1978, 780706
Int. Cl.[3] B01D *1/22*
U.S. Cl. 159—13 A 22 Claims



1. An apparatus for concentrating and purifying corrosive liquids such as sulphuric acid and the like, comprising:

at least one elongated tube having first and second open end portions interconnected by an intermediate portion;

means for supporting said tube such that said open first end portion is in fluid communication with a concentrated source of said corrosive liquid sulphuric acid or the like, said open second end portion is in fluid communication with a collecting vessel or the like capable of receiving said corrosive liquid, with said first end portion being positioned substantially vertically above said second end portion;

channel means arranged for conveying hot gases in a counter-current manner adjacent a portion of said intermediate tube portion to provide for heat transfer therebetween, said channel means comprising inner and outer flow channels each surrounding a portion of said intermediate tube portion, with a vertically lowermost portion of said outer channel being in direct fluid communication with a vertically lowermost portion of said inner channel and said inner channel surrounding and directly confronting said intermediate tube portion to provide for convective heat transfer between hot gases flowing through said inner channel and corrosive liquids flowing through said confronting intermediate tube portion;

turbulation means mounted within at least one of said inner and outer flow channels for causing vigorous turbulation of hot gases flowing through said channel means, thereby providing substantially uniform transfer of heat between said turbulent hot gases and said intermediate tube portion; and

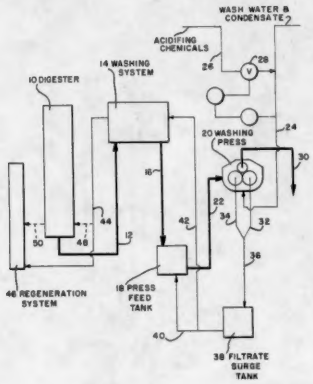
means for drawing hot gases into a vertically upper portion of said outer channel causing said hot gases to flow in a generally vertical downward direction through said outer channel and subsequently flow in a generally vertical upward direction through said inner channel conveying heat by radiation and convection to said intermediate tube portion and any corrosive liquids and the like flowing therethrough.

4,269,656

WOOD PULP FORMING SYSTEM AND METHOD OF RECOVERING SPENT CHEMICALS

Joseph K. Perkins, Nashua, N.H., assignor to Ingersoll-Rand Company, Princeton, N.J.

Filed Apr. 2, 1980, Ser. No. 136,538
Int. Cl.[3] D21C 9/02
U.S. Cl. 162—30 R 2 Claims



1. A method of recovering spent chemicals used in cooking wood in a digester comprising the steps of: feeding the pulp suspension through a brown stock washing system, and then to a washing press; acidifying the wash liquid before the wash liquid enters the washing press to provide a pulp suspension pH from the washing press compatible with desorbtion of metallic ions; recycling one portion of the acid containing filtrate back to the pulp suspension being fed to the washing press and recycling the remaining portion of said acid containing filtrate countercurrently through the brown stock washing system; and recovering the chemicals contained in the brown stock washing system filtrate.

4,269,657

FIBROUS PRODUCT CONTAINING CELLULOSIC FIBERS, ITS METHOD OF PREPARATION AND ITS USE, IN PARTICULAR IN THE FIELD OF COVERING PANELS, IN LIEU OF ASBESTOS

Daniel Gomez, and Giampaolo Bartoli, both of Charavines, France, assignors to Arjomari-Prioux, Paris, France

Filed Nov. 22, 1978, Ser. No. 963,015
Claims priority, application France, Nov. 23, 1977, 77 35245
Int. Cl.[3] D21H 1/10
U.S. Cl. 162—135 23 Claims

1. A method of preparation of a fibrous cellulosic fibers-containing product having good dimensional and thermal stability, elasticity and resistance to traction and tearing which comprises the steps of

(a) producing a flow of an aqueous suspension through a machine of the paper-making type, the aqueous suspension comprising:

100 parts by weight of fibers selected from the group consisting of (i) slightly refined cellulosic fibers having a Schopper-Reigler degree comprised between 15 and 35, and (ii) mixtures of said slightly refined cellulosic fibers with non-cellulosic fibers in which the weight ratio of non-cellulosic fibers to cellulosic fibers is lower than or equal to 0.1,

1 to 5 parts by weight of a cationic polymeric flocculating agent, 5 to 30 parts by weight of an organic polymeric binder, and 30 to 60 parts by weight of an inorganic filler, to form a wet sheet,

(b) draining the wet sheet under a linear load of 5 to 35 kg/cm, and

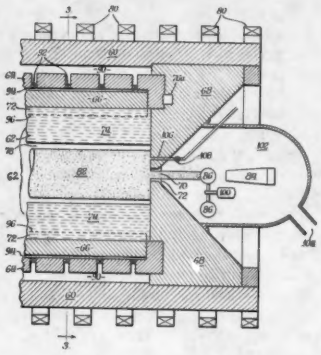
(c) drying the drained sheet.

4,269,658

MECHANICAL COMPRESSION PLASMA DEVICE

Tihiro Ohkawa, LaJolla, Calif., assignor to General Atomic Company, San Diego, Calif.

Continuation-in-part of Ser. No. 622,089, Oct. 14, 1975, abandoned, and a continuation-in-part of Ser. No. 375,341, Jul. 2, 1973, abandoned. This application Feb. 14, 1977, Ser. No. 768,263
Int. Cl.[2] G21B 1/00
U.S. Cl. 176—3 17 Claims



1. Apparatus for providing a pinched, high temperature plasma comprising, in combination:

containment means having an elongated bore therein for defining a reservoir;

an electrically conductive liquid located within and partially filling said reservoir;

means for inductively rotating said liquid to generate sufficient centrifugal force to form said liquid into a thick, rotating liquid liner and to create a cylindrical space extending along the axis of said bore;

means for creating a plasma along the axis of said bore within said space;

means surrounding said bore for applying a magnetic field the length of said bore; and

means comprising a plurality of inwardly movable wall members for mechanically reducing the effective diameter of said bore to apply a substantially axially symmetrical mechanical force impulse to said rotating liquid liner and thereby reducing the diameter of said space within said rotating liquid to compress said magnetic field so as to provide a magnetic pinch effect on said plasma and thereby cause said plasma to be compressed and increase in temperature.

4,269,659

NEUTRON GENERATOR

Leon Goldberg, 9921 Bedfordshire Ct., Potomac, Md. 20854

Continuation-in-part of Ser. No. 396,537, Sep. 12, 1973, abandoned, which is a continuation of Ser. No. 24,151, Mar. 23, 1970, abandoned. This application Mar. 29, 1978, Ser. No. 891,338
Int. Cl.[3] G21C 1/00
U.S. Cl. 176—9 5 Claims

1. A method of generating neutrons comprising the steps of:

(A) cyclically admitting quantities of thermonuclear fuel into a plenum chamber;

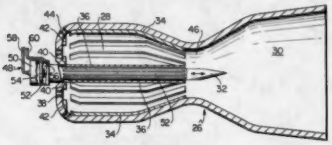
(B) ionizing each quantity of fuel to form a pulse of rela-

tively dense plasma immediately after it is admitted into the chamber;

(C) confining each plasma pulse within an electromagnetic field in such chamber;

(D) continually admitting a separate working gas at a predetermined velocity at a position apart from, but in proximity to, where said thermonuclear fuel is admitted to thereby surround each plasma pulse with said working gas within said electromagnetic field to stabilize and isolate said plasma pulse from the walls of said plenum chamber;

(E) essentially adiabatically comprising said plasma pulse with said electromagnetic field to initiate a reaction in said plasma pulse with said working gas surrounding it;



(F) moving said working gas and reacting plasma pulse through and out of said plenum chamber into a nozzle means and releasing said reacting plasma pulse from said electromagnetic field by removig said electromagnetic field when the plasma pulse passes into the nozzle means thereby mixing said pulse with said working gas and releasing its remaining energy thereto substantially isothermally in said nozzle means;

(G) adj[illegible]ing the area of the throat of said nozzle means by adjus[illegible]g the position of a reciprocable center body which extends through said chamber into said nozzle means.

4,269,660

DEVICE FOR TRANSPORTING RADIOACTIVE MATERIAL

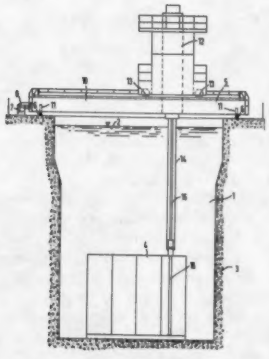
Walter Neuenfeldt, Schmitten; Heiner Siegert, Wiesbaden, and Günter Zeitzschel, Frankfurt, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Jul. 5, 1978, Ser. No. 921,993

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1977, 2730569

Int. Cl.[3] G21C *19/20*

U.S. Cl. 176—30 **6 Claims**



1. Device for transporting radioactive material having a lifting mechanism displaceable along a travel path, comprising an operator's cab for accommodating operating personnel therein shielded against radiation and displaceable with the lifting mechanism along the travel path, a control console for actuating the lifting mechanism, said control console being disposed in and displaceable with said cab, filter means through which said cab is ventilated with filtered air, and means for testing the ventilating air for freedom thereof from radiation.

4,269,661

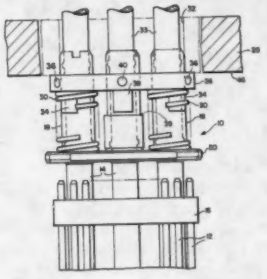
TOP NOZZLE FOR A NUCLEAR REACTOR FUEL ASSEMBLY

Stanley Kmonk; Dennis J. Cadwell, both of Plum Borough, and Stephen J. Ferlan, Wilkins Township, Allegheny County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 15, 1978, Ser. No. 915,650

Int. Cl.[2] G21C *1/06, 3/32*

U.S. Cl. 176—50 **1 Claim**



1. In a nuclear reactor fuel assembly including an array of fuel rods and control rod guide tubes held in spaced relationship with each other by means positioned at intervals along their length, upper and lower nozzles connected to opposite ends of said guide tubes, and an upper core plate above the fuel assembly which absorbs lifting forces acting on the assembly, the upper nozzle including:

control rod guide tube extensions including a center guide tube extension and selected guide tube extensions, said extensions being attached to an orifice plate located immediately above said fuel rods;

means respectively connecting the control rod guide tubes to said tube extensions;

a hold-down plate vertically movable on said tube extensions, said plate having openings of a size sufficient to accept the guide tube extensions;

springs on said selected tube extensions between the orifice and hold-down plate and biased in a direction to urge the hold-down plate vertically against said upper core plate;

at least one vertically extending slot in each guide tube extension outer surface; and

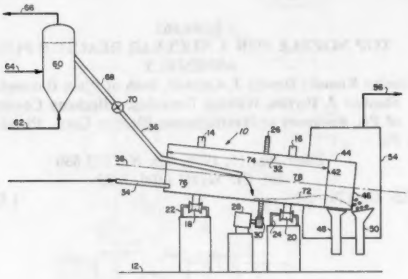
a pin for each of said slots, each of said pins being mounted in the hold-down plate and in a position to have its end project into a corresponding slot formed in the tube extension, the arrangement being such that as upwardly acting forces lift the fuel assembly, the springs on said extensions are unformly compressed until the pins are engaged by the bottom of said slots, thus permitting the assembly to be lifted to its upper limit without compressing the springs to a solid condition; and a shoulder on said center tube extension arranged to contact the hold-down plate when said forces lift the fuel assembly to thereby supplement the action of the pin and slot arrangement in limiting upward movement of the fuel assembly.

4,269,662

APPARATUS FOR COMPACTING, DEGASSING AND CARBONIZING CARBONACEOUS AGGLOMERATES

Frank W. Theodore, Pittsburgh, Pa., assignor to Conoco, Inc., Stamford, Conn.

Division of Ser. No. 11,724, Feb. 12, 1979, Pat. No. 4,218,288.
This application Dec. 3, 1979, Ser. No. 99,773
Int. Cl.[3] C10B *1/10, 49/20*
U.S. Cl. 202—100 3 Claims



1. An apparatus for compacting, degassing and carbonizing carbonaceous agglomerates, said apparatus comprising:

(a) a rotary kiln, said kiln having an inlet end, an outlet end and a longitudinal axis, said axis being oriented to facilitate the movement of said agglomerates through said kiln;

(b) means for rotatably supporting said kiln;

(c) means for rotating said kiln;

(d) an agglomerate inlet means for introducing said agglomerates into said kiln near said inlet end of said kiln;

(e) a heating medium inlet means for introducing a heating medium into said kiln at a selected location between said inlet end of said kiln and said outlet end of said kiln, said heating medium being introduced at said location to provide a compacting and degassing time in the section of said kiln between said inlet end and said location from about 1 to about 15 minutes and a carbonizing time between said location and said outlet end from about 1 to about 15 minutes;

(f) control means positioned at said outlet end of said kiln to control the residence time of material in said kiln; and

(g) sieve means positioned to receive the products from said kiln and separate said heating medium and compacted, degassed, carbonized agglomerate product.

4,269,663

WATER DISTILLER

Richard McFee, 852 Ostrom Ave., Syracuse, N.Y. 13210

Division of Ser. No. 593,379, Jul. 7, 1975, Pat. No. 4,052,267.
This application Aug. 19, 1977, Ser. No. 826,236
Int. Cl.[3] B01D *3/02;* C02F *1/04*
U.S. Cl. 202—185 B 13 Claims

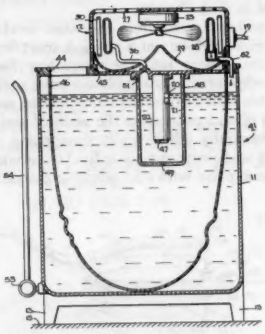
1. A portable water distiller comprising

a self-supporting housing;

a flexible impermeable partition mounted within said housing to define a raw water space and a distilled water space therein;

a cap mounted on said housing, said cap including an opening for passage of raw water into said raw water space within said housing;

a heater disposed in said housing for vaporizing the raw water in said raw water space; and



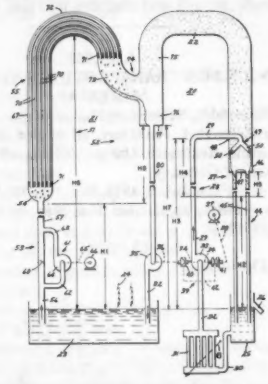
means for condensing the vaporized raw water and for delivering the condensed water into said distilled water space.

4,269,664

LIQUID TREATING AND DISTILLATION APPARATUS

Philip G. Younger, 919 19th St., SE., St. Cloud, Minn. 56301

Filed Dec. 1, 1978, Ser. No. 965,593
Int. Cl.[3] C02F *1/06;* B01D *3/10*
U.S. Cl. 202—185 A 8 Claims



1. A liquid treating system which, after an initial start-up period, is maintained operable solely by the temperature difference between cooler, treated liquid and warmer, untreated liquid comprising, in combination:

a condensation chamber closed to the atmosphere and having first and second portions in communication with each other to provide a path between said portions for vapor but not for liquid, said condensation chamber having its second portion disposed at a given height;

closed output means connected to said first portion of said chamber and including an apogee and pumping means actuable to cause flow of treated liquid at a first temperature to said apogee and into said first portion, so as to cool said first portion, and from said first portion, so as to lower the pressure therein by entrainment of gas therefrom to the vapor pressure of the liquid at said first temperature;

a source of untreated liquid under atmospheric pressure and at a second, higher temperature, said source disposed at a height lower than said height at which said second portion of said condensation chamber is disposed;

closed input means connected to said source and to said second portion of said chamber, for enabling flow of untreated liquid and vapor thereof, at a second, higher temperature, to a height above said apogee of said output means and into said second portion, and for enabling gravity drain of unvaporized, untreated liquid from said second portion to the level of said source, to maintain the pressure in said second portion at the vapor pressure of said liquid corresponding to said second temperature,

whereby migration of vapor from said second portion to said first portion lowers the pressure in said second portion to the vapor pressure of said liquid at said second temperature, at which pressure said flow in said input means is caused by said atmospheric pressure on said source;

and means driven by said gravity drain for actuating said pumping means.

4,269,665

DRYING QUATERNARY AMMONIUM COMPOUNDS

Carl E. Barnes, 482 Trinity Pass Rd., New Canaan, Conn. 06840, and Arthur C. Barnes, 320 Stamford Ave., Stamford, Conn. 06902

Division of Ser. No. 39,773, May 17, 1979, Pat. No. 4,217,442, which is a continuation-in-part of Ser. No. 899,066, Apr. 24, 1978, abandoned. This application Oct. 15, 1979, Ser. No. 84,813

Int. Cl.³ B01D *3/36*

U.S. Cl. 203—14 **2 Claims**

1. The method of drying water wet quaternary ammonium compounds comprising adding the wet quaternary ammonium compound to an amount of 2-pyrrolidone greater than that required to azeotrope all of said water and distilling off under vacuum from 5 to 50 percent of the 2-pyrrolidone whereby a substantially anhydrous liquid solution of the quaternary ammonium compound in 2-pyrrolidone is formed.

4,269,666

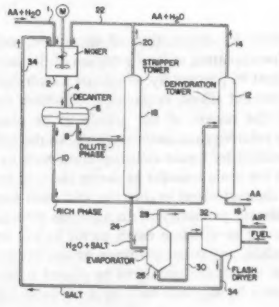
RECOVERY OF ACRYLIC ACID BY REVERSAL OF ACRYLIC ACID/WATER RELATIVE VOLATILITY

Carl G. Wysocki, North Royalton, Ohio, assignor to Standard Oil Company, Cleveland, Ohio

Filed Jan. 24, 1979, Ser. No. 6,056

Int. Cl.³ C07C *51/44*

U.S. Cl. 203—15 **9 Claims**



6. A method for separating acrylic acid from an organic solvent free mixture of acrylic acid and water comprising the steps of:

(a) performing a first step consisting of dissolving in said mixture a salt in an amount sufficient to salt out the mixture to form a concentrated acrylic acid phase, and a dilute acrylic acid phase containing 20 wt.% or less acrylic acid, said salt characterized in that upon boiling a salt saturated 10 wt.% acrylic acid aqueous solution to obtain a vapor and a liquid component at equilibrium, the wt.% acrylic acid in the vapor is greater than the wt.% acrylic acid in the liquid;

(b) separating the concentrated phase from the dilute phase; and

(c) distilling said dilute phase to obtain a vapor stream containing acrylic acid and a liquid stream free from acrylic acid.

4,269,667

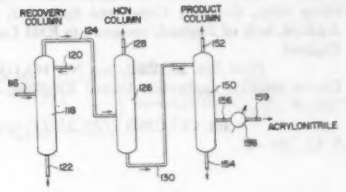
ACRYLONITRILE PURIFICATION BY EXTRACTIVE DISTILLATION

Norris J. Landis, Cleveland Hts., Ohio, assignor to Standard Oil Company, Cleveland, Ohio

Filed Aug. 2, 1979, Ser. No. 63,216

Int. Cl.³ B01D *3/40*

U.S. Cl. 203—76 **8 Claims**



1. A process for the recovery and purification of acrylonitrile produced by the ammoxidation reaction of propylene, molecular oxygen and ammonia which consists of the steps of:

(a) contacting the gaseous ammoxidation reactor effluent with water to absorb the acrylonitrile, acetonitrile, HCN and some impurities, and to obtain a first liquid stream containing acrylonitrile;

(b) extractively distilling with water in a distillation column said first liquid stream to separate the acrylonitrile from the acetonitrile and to obtain a overhead stream of acrylonitrile, water, HCN and impurities;

(c) distilling in a distillation column said overhead stream of (b) to separate the acrylonitrile from the HCN to obtain a bottoms solution of acrylonitrile, water and some impurities, the improvement comprising;

(d) distilling said solution in a distillation column under vacuum, and removing a vaporous sidestream of purified acrylonitrile.

7. The process of claim 1 wherein said solution of step (c) is passed to a decanter to separate an aqueous phase and an organic phase, and feeding said organic phase to said distillation column of step (d).

4,269,668

EXTRACTIVE DISTILLATION OF C-4 HYDROCARBONS USING MODIFIED ALKOXYNITRILE SOLVENT

Pradeep V. Patel, Parma, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed May 19, 1980, Ser. No. 151,011

Int. Cl.³ B01D *3/40*; C07C *7/08*

U.S. Cl. 203—9 **14 Claims**

1. In an extractive-distillation process for separating butadiene-1,3 from a C-4 hydrocarbon stream containing C-4 hydrocarbons more saturated than butadiene-1,3 which process includes the steps of (a) introducing a selective solvent to an extractive distillation column (b) introducing said C-4 hydrocarbon stream to said column at a point below the point of introduction of said selective solvent (c) selectively extracting butadiene-1,3 from said C-4 hydrocarbon stream to form a liquid solvent fraction richer in butadiene-1,3 (d) withdrawing overhead from said column a vaporous C-4 hydrocarbon fraction richer in hydrocarbons less saturated than butadiene-1,3 (e) withdrawing said liquid solvent fraction richer in butadiene-1,3 from the bottom of said column (f) introducing said

withdrawn liquid solvent fraction to a stripping column to remove said butadiene-1,3 and (g) recycling the lean solvent to said extractive distillation column, and in which process the selective solvent contains an alkoxynitrile of the structure R_1—O—R_2—CN wherein R_1 is an alkyl group and R_2 is an alkylene group each containing from 1 to 3 carbon atoms, the improvement which consists of adding to the selective solvent an organic cosolvent selected from the class consisting of dimethyl sulfoxide, sulfolane, butyrolactone, N-methyl pyrrolidone, morpholine and trimethyl phosphate in an amount from 5 to 30 percent by weight of the total solvent and/or an inhibitor selected from the class consisting of 2,4-dinitrophenol and 2,4 dinitro-ortho-cresol in an amount from 0.05 to 0.6 percent by weight of the total solvent.

4,269,669

HIGH SPEED ELECTROPLATING

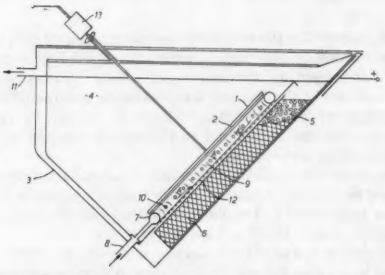
William Soby, Gerrards Cross, and Samuel J. B. Johnston, Ashford, both of England, assignors to EMI Limited, Hayes, England

Filed Apr. 23, 1980, Ser. No. 143,118

Claims priority, application United Kingdom, Jun. 1, 1979, 19209/79

Int. Cl.³ C25D *1/10, 21/12*

U.S. Cl. 204—5 **5 Claims**



1. An electroplating arrangement including a container for an electrolyte, an anode, a cathode having a plating surface and means for generating a flow of electrolyte away from the surface of the cathode, said flow generating means comprising a tube which, at least adjacent to the plane of the cathode surface, encloses a region between the cathode and anode and has a plurality of inwardly facing holes, thereby inhibiting flow of electrolyte from the region of the anode towards the cathode.

4,269,670

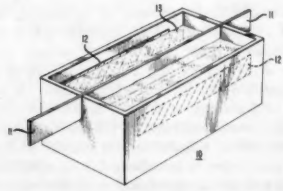
ELECTRODE FOR ELECTROCHEMICAL PROCESSES

Craig G. Smith, North Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 3, 1980, Ser. No. 126,840

Int. Cl.³ C25D *5/02, 3/48, 17/10*

U.S. Cl. 204—15 **25 Claims**



1. A process for electroplating a metal on a surface comprising the step of passing current through electrode and electrolyte characterized in that the surface of at least one electrode is at least partially covered with an active oxide coating, said active oxide coating consisting essentially of oxide of at least 10 mole percent group VIII metal, at least 10 mole percent valve metal and at least 5 mole percent binder metal, said group VIII metal consisting of at least one element selected from the group consisting of cobalt, nickel, ruthenium, rhodium, palladium, iridium, and platinum, said valve metal consisting of at least one metal selected from the group consisting of titanium, zirconium, hafnium, vanadium, niobium, and tantalum, and said binder metal consisting of at least one metal selected from the group consisting of beryllium, calcium, strontium, barium, scandium, yttrium, lanthanum, and the rare earth elements with atomic numbers 58 through 71 and at least 5 mole percent of the said active oxide is in the form of mixed oxide with nominal formula ABO_3 with A representing binder metal and B representing group VIII metal.

4,269,671

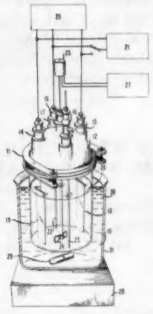
ELECTROPLATING OF SILVER-PALLADIUM ALLOYS AND RESULTING PRODUCT

Uri Cohen, Haifa, Israel, and Richard Sard, Birmingham, Mich., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 5, 1979, Ser. No. 90,938

Int. Cl.³ C25D *3/50, 3/56, 5/10, 5/34*

U.S. Cl. 204—23 **13 Claims**



1. Procedure for fabrication of an article, said procedure including electroplating at least a region of the said article with an alloy at least 90 percent by weight of which contains at least 30 weight percent silver, remainder palladium in accordance with which the region of the article to be plated is biased cathodically relative to an anode, with both the said region and the anode wetted by liquid electroplating bath to form a continuous path for ionic transfer between the said article and the said anode, characterized in that the said bath may be considered as consisting primarily of an aqueous solution of at least one alkali metal or alkaline earth metal halide together with palladium halide, any other platinum group halide/s and silver halide and in which the article to be plated is protected from chemical attack by the said bath by a noble metal surface.

4,269,672

GAP DISTANCE CONTROL ELECTROPLATING

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Tokyo, Japan

Filed May 30, 1980, Ser. No. 154,953

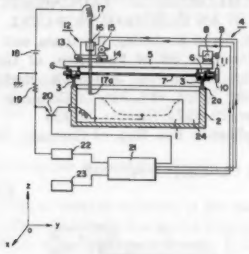
Claims priority, application Japan, Jun. 1, 1979, 54-67483

Int. Cl.³ C25D *5/04, 7/04*

U.S. Cl. 204—23 **7 Claims**

1. A method of electroplating a metal upon a substrate wherein a rod electrode is axially and spacedly justaposed with

the substrate across an electrolyte flooded plating gap; an electric current is passed between the rod electrode and the substrate across said gap to electrodeposit the metal from the electrolyte at least preferentially in the region of the substrate proximal to an end portion of said electrode justaposed therewith; and said rod electrode is displaced relative to said substrate while maintaining the orientation of its axis to be substantially perpendicular to a fixed plane to successively electrodeposit the metal over the entire area of said substrate to be electroplated, the method comprising the step of controlling the position of said rod electrode relative to the surface con-



tour of said substrate in such a manner that the following relationship is maintained substantially over said area:

$$G = Gs/\sin \alpha$$

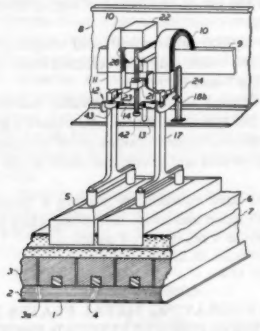
where G is a distance defined between the end of said rod electrode proximal to said substrate and the point of intersection of the extension of the axis of said electrode and said surface contour, α is an angle defined by said extension with a tangent of the surface contour at said point of intersection and Gs is a constant representing a reference gap spacing between said electrode and said workpiece.

4,269,673

ANODE MOUNT

John F. Clark, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 28, 1980, Ser. No. 115,621
Int. Cl.³ C25C *3/06, 3/16*
U.S. Cl. 204—67 **4 Claims**



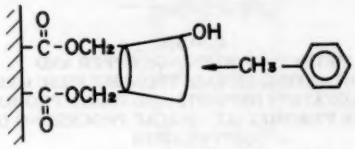
4. In an operating method for a cell which may be used for producing molten aluminum by electrolysis of aluminum oxide in a molten bath, which cell includes a cathode and an anode, a bar and a hanger, the bar being connected at an upper end to the hanger and at a lower end to the anode, flexible means for supplying electrical current through the bar to the anode, and jack means for raising and lowering the hanger and thus the anode, the improvement comprising guiding the raise and lower movement of the hanger by mounting the hanger at at least two separated points, one higher than the other, in encompassing, sliding relationship, on a single, upright, circular cross-sectioned post passing through the hanger, whereby the hanger is constrained to move up and down without rotation about horizontal axes.

4,269,674

METHOD OF PREPARING PARA-CHLOROTOLUENE

Tetsuo Osa, Sendai; Masamichi Fujihira, Sendai; Tomokazu Matsue, Sendai, and Takashi Yamauchi, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 10, 1979, Ser. No. 101,917
Claims priority, application Japan, Dec. 22, 1978, 53-160611
Int. Cl.³ C25B *3/06*
U.S. Cl. 204—81 **5 Claims**



1. A process for electrolytically chlorinating toluene to produce p-chlorotoluene in an aqueous solution of hydrogen chloride or an inorganic chloride as an electrolyte by passing electric current from a cathode to an anode immersed in said solution of electrolyte whereby an active chlorine species is formed and reacts with toluene to produce the desired p-chlorotoluene, said anode being of a carbonaceous material having cyclodextrin or a derivative thereof bonded onto the surface thereof,

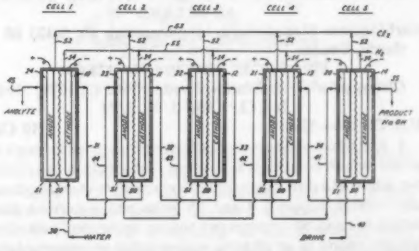
wherein toluene is introduced into said aqueous solution of electrolyte so that said toluene is included as a clathrate compound within said cyclodextrin or derivative thereof, and said electric current is passed at a potential higher than the oxidation potential of hydrogen chloride in said aqueous solution but lower than the oxidation potential of toluene.

4,269,675

ELECTROLYTE SERIES FLOW IN ELECTROLYTIC CHLOR-ALKALI CELLS

Bobby R. Ezzell, and Marius W. Sorenson, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 924,268, Jul. 13, 1978, Pat. No. 4,197,179. This application Nov. 19, 1979, Ser. No. 95,694
Int. Cl.³ C25B *1/34, 9/00*
U.S. Cl. 204—98 **10 Claims**



1. In the process of producing aqueous alkali metal hydrox-

ide and chlorine gas by the electrolysis of aqueous alkali metal chloride solution in a bank of a plurality of membrane cells, said alkali metal hydroxide being produced at cathodes in catholyte portions, said chloride being produced at anodes in anolyte portions, said membrane providing a substantially hydraulically-impermeable divider between catholyte portions and anolyte portions, wherein said cathodes are oxygen-depolarized cathodes which are operable in substantially avoiding production of hydrogen, the improvement which comprises

flowing an aqueous alkali metal chloride as anolyte for the anolyte portions, said flowing being done in sequence from anolyte portion to anolyte portion, removing spent anolyte from the last anolyte portion of the sequence, while simultaneously and countercurrently

flowing an aqueous catholyte from catholyte portion to catholyte portion in sequence, removing caustic-enriched catholyte from the last catholyte portion of the sequence.

4,269,676

METHOD OF WINNING COPPER AND ACCOMPANYING METALS FROM SULFIDIC ORES, POST-FLOTATION DEPOSITS AND WASTE PRODUCTS IN THE PYROMETALLURGICAL PROCESSING OF COPPER ORES

Wlodzimierz Libus, Gdansk; Marek Kluczkowski, Gdansk-Oliwa; Michal Pilarczyk; Henryk Strzelecki, both of Gdansk; Roman Pastewski, and Waclaw Grzybkowski, both of Gdansk-Oliwa, all of Poland, assignors to Politechnika Gdanska, Gdansk-Wrzeszcz, Poland

Filed Jul. 3, 1979, Ser. No. 54,368

Claims priority, application Poland, Jul. 26, 1978, 208670

Int. Cl.³ C25C *1/12*; C22B *3/00, 15/00*; C01G *3/04*

U.S. Cl. 204—107 **8 Claims**

1. A method of winning copper and accompanying metals from a copper-containing material selected from the group consisting of sulfidic ores or their concentrates, post-flotation deposits and waste products from pyrometallurgical processing of copper ores, which comprises grinding the material to a particle size below 0.1 mm., leaching the resulting comminuted material with a solvent system comprising a mixture of a heterocyclic aromatic amine selected from the group consisting of pyridine, α-picoline, β-picoline, γ-picoline and 2,6-lutidine, with a chlorinated methane derivative selected from the group consisting of methyl chloride, methylene dichloride, chloroform and carbon tetrachloride, whereby insoluble values of the metals are dissolved in the resulting solution due to the formation of a soluble metal-chloro- amine complex, filtering the solid residue from the resulting solution and separating the metal compounds from the organic phase, and recovering the metals by electrowinning.

4,269,677

ANODIC DEBURRING OR BRIGHTENING OF STEEL ARTICLES

Karl-Ingemar Blomsterberg, Högstensgatan 60, S-423 00 Torslanda, Sweden

Filed Feb. 15, 1980, Ser. No. 121,680

Claims priority, application Sweden, Feb. 19, 1979, 7901437

Int. Cl.³ C25F *3/06, 3/24*

U.S. Cl. 204—129.4 **10 Claims**

1. A method of electrolytically deburring or polishing a steel article which comprises subjecting said article as the anode to the action of a direct current in an electrolyte at an anode-cathode voltage between 4 and 25 volts and a current density between 2 and 50 amperes per square decimeter, said electrolyte consisting of an alkaline watery solution composed essentially of at least one polyhydric alcohol, alkali sulphamate and water in the following proportions:

	Grams per liter of the solution:
Polyhydric alcohol	At least 300
Alkali sulphamate	At least 200
Water	At least 200.

4,269,678

METHOD FOR REGENERATING A CUPRIC CHLORIDE AND/OR FERRIC CHLORIDE CONTAINING ETCHING SOLUTION IN AN ELECTROLYSIS CELL

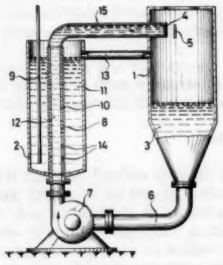
Wolfgang Faul, Jülich; Bertel Kastening, Hamburg, and Harald Luft, Niederzier-Hambach, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschrankter Haftung, Jülich, Fed. Rep. of Germany

Filed Nov. 20, 1979, Ser. No. 96,136

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1978, 2850564

Int. Cl.³ C25F *3/14, 7/02*

U.S. Cl. 204—129.6 **8 Claims**



1. A method of regenerating a chloride-containing etching solution for electrochemically processing surfaces of workpieces without development of chlorine gas at anode locations, comprising in combination the steps of:

providing an electrolysis cell having an anode compartment with a pertaining anode, a cathode compartment with a pertaining cathode, and a partition between said anode compartment and said cathode compartment;

providing in said anode compartment a solution containing at least one of the group consisting of cupric chloride and ferric chloride;

processing a workpiece surface with said solution, resulting in a used solution containing ions selected from the group consisting of Cu^{+} and Fe^{++};

suspending an effective amount of activated pulverous carbon particles that specifically preclude chlorine gas development even after complete oxidation of metallic ions or cations at least in said anode compartment of the electrolysis cell; and

regenerating said used solution by passing it through said electrolysis cell again and anodically completely oxidizing cations to provide a regenerated solution.

4,269,679

PROCESS FOR ENGRAVING METAL PLATES TO BE USED AS PATTERNS FOR TEXTURIZED PRODUCTS

Joao B. Moura, Jundiai, Brazil, assignor to Duratex S.A., Sao Paulo, Brazil

Filed Jul. 27, 1979, Ser. No. 61,242

Claims priority, application Brazil, Jan. 31, 1979, PI 7900616

Int. Cl.³ C25F *3/06, 3/14*

U.S. Cl. 204—129.65 **2 Claims**

1. Method for engraving metal plates to be used for producing texturized articles with a pattern comprising the steps of:

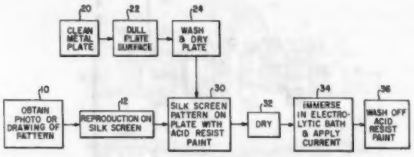
making a silk screen of the pattern to be engraved on a said metal plate,

dulling the surface of said plate by applying a solution thereto,

laying down on the plate by screening from the silk screen an acid-resist material reproduction of the pattern,

providing a bath of inorganic acid selected from the group consisting of sulfuric acid and hydrochloric acid,

providing an electrode in said bath,



immersing the area of the plate to be engraved in said bath, and

applying an electric current, in the range of from about one to about twenty-five amperes per square decimeter of area which is not covered by the acid-resist material, said current having a voltage in the range of from about one to about ten volts, between said plate and said electrode to erode the plate by electrochemical action in the immersed areas not covered by the acid-resist material.

4,269,680

CURABLE POLYMERIC COMPOSITION COMPRISING NATURAL OR SYNTHETIC RUBBERS

William Rowe, Westfield, N.J., assignor to Polychrome Corporation, Yonkers, N.Y.

Continuation-in-part of Ser. No. 2,647, Jan. 11, 1979, Pat. No. 4,214,965, which is a continuation of Ser. No. 600,653, Jul. 21, 1975, abandoned, which is a continuation of Ser. No. 328,678, Feb. 1, 1973, abandoned. This application Feb. 19, 1980, Ser. No. 122,347

Int. Cl.³ C08F *8/00*

U.S. Cl. 204—159.17 **9 Claims**

1. A composition which is comprised of an admixture of:

I. a polymer which is substantially comprised of the reaction product of:

A. an organic, active hydrogen containing compound, which compound has an average active hydrogen functionality in the range of from 2.0 to about 2.2 with,

B. an excess of an organic polyisocyanate so as to form an isocyanate terminated prepolymer, said prepolymer having been subsequently reacted with,

C. an organic, active hydrogen containing compound, which compound has exactly one active hydrogen; said polymer having a molecular weight of from 5,000 to 50,000 with 0% free isocyanate groups; and,

II. an addition polymerization initiator activatable by actinic light; and,

III. an addition polymerizable ethylenically unsaturated component capable of forming a polymer by photoinitiated polymerization in the presence of said initiator; and,

IV. a natural or synthetic rubber in an amount ratio of rubber to polymer of 90:10 to 10:90 parts by weight.

4,269,681

RADIAL FLOW ELECTROFILTER

Frederick D. Watson; Weldon D. Mayse, and Albert D. Franse, all of Houston, Tex., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Oct. 16, 1979, Ser. No. 85,448

Int. Cl.³ B03C *5/00*

U.S. Cl. 204—188 **13 Claims**

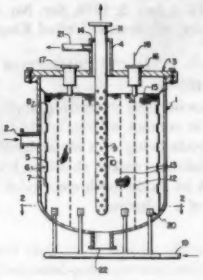
1. A radial flow electrofilter for removal of finely divided solid particles from liquids of low electrical conductivity comprising:

(a) a vertical cylindrical metallic vessel;

(b) metallic cylindrical fluid distributor means within said vessel, concentric with and spaced a small distance apart from the vessel wall, thereby providing an annular space between said distributor means and said vessel wall; said distributor means being adapted to serve as an electrode at ground potential;

(c) fluid inlet means in the side of said vessel, fluidly communicating with said annular space;

(d) a porous bed of a dielectric filtering medium disposed interiorly of said cylindrical distributor means;



(e) a metallic permeable central tubular outlet collector extending vertically through at least a portion of said porous bed; said outlet collector being adapted to serve as an electrode;

(f) fluid outlet means fluidly connected to said central tubular outlet collector and extending outside of said vessel;

(g) at least one permeable cylindrical electrode extending vertically through at least a portion of said porous bed and concentrically positioned intermediate said cylindrical distributor means and said outlet collector; and

(h) conductor means for supplying potential to at least alternately spaced said electrodes to provide electric fields between adjacent electrodes.

4,269,682

REFERENCE ELECTRODE OF INSULATED GATE FIELD EFFECT TRANSISTOR

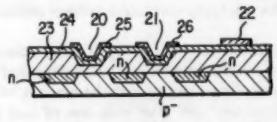
Makoto Yano; Kiyoo Shimada; Kyoichiro Shibatani, and Tsutomu Makimoto, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd. and Tadayuki Matsuo, both of Sendai, Japan

Filed Dec. 11, 1978, Ser. No. 968,418

Claims priority, application Japan, Dec. 12, 1977, 52/150093

Int. Cl.³ G01N *27/46*

U.S. Cl. 204—195 M **18 Claims**



1. A system for measuring chemical properties of substances in an electrolyte solution, comprising:

a measuring unit comprising an insulated gate FET which selectively detects specific chemical substances;

a reference electrode comprising an insulated gate FET whose gate region is overlayed with a membrane, said membrane consisting of a hydrophobic organic polymeric membrane material that is impermeable to the electrolyte

solution, free of an ionic dissociate group and insensitive to chemical properties of the solution;

a pseudo reference electrode formed of a good electrical conductor which applies bias to each FET transducer and fixes the electric potential of the electrolyte solution.

4,269,683

ELECTROCHEMICAL MEASURING SYSTEM

John V. Dobson, Hartlepool, England, assignor to National Research Development Corporation, London, England

Filed Jun. 5, 1979, Ser. No. 45,650

Claims priority, application United Kingdom, Jun. 19, 1978, 27235/78

Int. Cl.[3] **G01N** *27/46*

U.S. Cl. 204—195 W **7 Claims**

1. An electrochemical measuring apparatus, comprising: a lead electrode in contact with its oxide containing sulfate and a second electrode being of a metal selected from the group consisting of platinum, nickel, rhodium, iridium and zirconium in contact with its oxide, both electrodes being connected to opposite sides of a voltmeter.

4,269,684

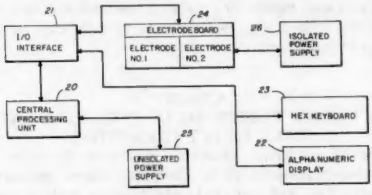
APPARATUS FOR OXYGEN PARTIAL PRESSURE MEASUREMENT

Gregory L. Zick, Kirkland, Wash., assignor to Cordis Corporation, Miami, Fla.

Filed Oct. 1, 1979, Ser. No. 80,257

Int. Cl.[3] **G01N** *27/46*

U.S. Cl. 204—195 R **4 Claims**



1. Apparatus for the measurement of the partial pressure oxygen level comprising:

(1) an electrochemical cell having an anode and a cathode immersed in a electrolyte, said cell disposed for contact with oxygen;

(2) means for applying successive voltage pulses across said cell;

(3) means for determining for each of said pulses the difference between the amount of charge delivered to said cell during one of said pulses and the amount of charge returned from said cell after said one of said pulses, said difference indicating an uncorrected value of said oxygen partial pressure; and

(4) means for multiplying said difference by a function of a correction factor derived from variation between a first transient waveform representing the charge returned from said cell as a function of time after a first of said pulses and a second transient waveform representing the charge returned from said cell as a function of time after a succeeding one of said pulses.

4,269,685

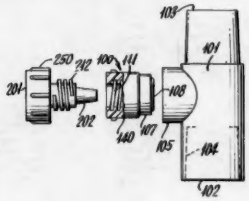
DISPOSABLE POLAROGRAPHIC GAS SENSOR SYSTEM

Dawood Parker, London, United Kingdom, assignor to McNeilabs, Inc., Fort Washington, Pa.

Filed Oct. 16, 1979, Ser. No. 85,186

Int. Cl.[3] **G01N** *27/54*

U.S. Cl. 204—195 P **2 Claims**



1. A partially reusable, partially disposable blood gas sensor comprising:

(a) a reusable portion including an anode-cathode polarographic assembly, and electrical connectors for establishing a circuit from said polarographic electrodes to an external utilization device;

(b) a disposable portion including

(i) a housing defining a blood input port, a blood output port, a flow chamber therebetween, and a gas sensing region contacting at least a portion of said chamber;

(ii) a gas permeable membrane sealably overlying said gas sensing region for contact with blood in said chamber;

(iii) a gelatinous electrolyte, responsive to said gas, coating the side of said membrane opposite said chamber; and

(iv) means, integral with said housing, for removably coupling said reusable portion to said disposable portion, said means for coupling imbedding said polarographic assembly into said gelatinous electrolyte, wherein said means for removably coupling comprises a protuberance from said housing, surrounding said membrane and enclosing said gelatinous matter, said protuberance defining a threaded portion and said reusable portion defining a matably corresponding portion for screwed attachment of said reusable portion with said protuberance, simultaneously imbedding said assembly into electrolyte;

(c) wherein said polarographic assembly comprises a frustoconical, hollow anode, carrying a cathode generally axially therein; and

(d) disposable plug means, duplicating the shape of said reusable portion, and insertible into said protuberance of said disposable portion for storage and shipment prior to use.

4,269,686

APPARATUS FOR PLATING JOURNALS OF CRANKSHAFTS

Aubrey W. Newman, 416 E. 45th St.; J. E. Coffey, 4018 Lakeside Dr., and Arthur D. Whitney, 807 New Castle Ct., all of Odessa, Tex. 79762

Filed Jan. 8, 1980, Ser. No. 110,506

Int. Cl.[3] **C25D** *17/00, 7/00*

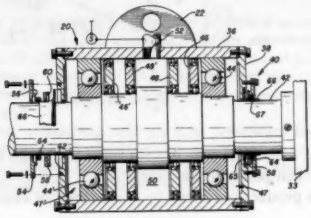
U.S. Cl. 204—212 **14 Claims**

1. A chrome plating apparatus for simultaneously plating selected areas of a plurality of crankshafts, wherein the crankshafts are rotatably supported within a plating bath with the longitudinal axis thereof being disposed horizontally while current flows between an anode and the selected area of the crankshaft to be plated; the improvement comprising:

a rotating conductor having a main fixed housing, a rotatable spindle journaled within said housing and arranged with

the longitudinal axial centerline thereof coinciding with the axial bore of the housing so that opposed ends of the spindle extend from either opposed end of the housing;

spaced internal seal means located within said housing and forming a centrally located mercury chamber which is defined by the inner wall surface of the chamber, the outer wall surface of the spindle, and the inner surface of the seal means;



spaced external seal means located at each opposed end of the housing and defining opposed grease chambers, a bearing means within each grease chamber which rotatably supports the spindle from said housing;

means on opposed ends of the spindle for supportingly engaging one end of a crankshaft;

whereby one end of a crankshaft can be affixed to each end of the spindle, thereby enabling a plurality of crankshafts to be simultaneously rotatably supported within a plating bath.

4,269,687

ELECTRODE SUSPENSION BARS

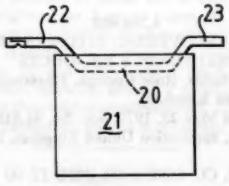
John R. B. Gilbert, Sutton Coldfield, and Peter H. Baldwin, Aldridge, both of England, assignors to IMI Kynoch Limited, Birmingham, England

Filed Jan. 23, 1980, Ser. No. 114,597

Claims priority, application United Kingdom, Jan. 23, 1979, 02422/79

Int. Cl.³ C25C *7/02*

U.S. Cl. 204—242 **13 Claims**



1. A suspension bar for an electrode sheet including a steel core with a surrounding layer of copper, the bar including, at the point adapted for contact with an electric current supply, a block of copper or of a copper alloy, said block being metallurgically bonded to the layer of copper, the block having on one side a notch transverse to the longitudinal axis of the bar, the steel core extending in a longitudinal direction beyond a part at least of the block on the side of the block opposite the notch.

4,269,688

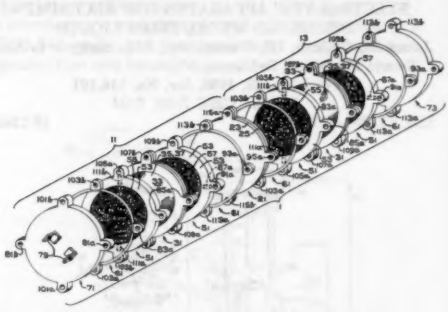
SOLID POLYMER ELECTROLYTE BIPOLAR ELECTROLYZER

Donald D. DuBois, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 15,525, Feb. 23, 1979, abandoned. This application Nov. 1, 1979, Ser. No. 90,214

Int. Cl.³ C25B *9/04, 13/08, 11/10*

U.S. Cl. 204—254 **1 Claim**



1. In a solid polymer electrolyte bipolar electrolyzer having a plurality of individual solid polymer electrolyte electrolytic cells electrically and mechanically in series with bipolar units therebetween, the anodic surface of the bipolar units consisting essentially of titanium oxide, wherein each of said solid polymer electrolyte electrolytic cells has a solid polymer electrolyte comprising a permionic membrane having an anodic surface and a cathodic surface with anodic electrocatalyst as the anode on the anodic surface and cathodic electrocatalyst as the cathode on the cathodic surface, the improvement wherein the surface of the bipolar unit is spaced from, and faces the anodic surface of the permionic membrane and the anodic electrocatalyst, and is an alloy of titanium and from 0.01 to 1.0 weight percent yttrium, the yttrium being present at a high enough level to diminish hydrogen uptake by the titanium but at a low enough level to avoid substantial formation of a two-phase system.

4,269,689

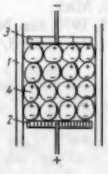
ELECTROLYZER FOR CONDUCTING ELECTROLYSIS THEREIN

Rafael I. Agladze, prospekt Plekhanova, 86/90, kv. 1; Erik A. Manukov, Digomsky massiv, 4 kvartal, 22 korpus, kv. 39, and Georgy R. Agladze, prospekt Plekhanova, 86/90, kv. 1, all of Tbilisi, U.S.S.R.

Continuation of Ser. No. 748,388, Dec. 7, 1976, abandoned. This application Sep. 11, 1979, Ser. No. 74,302

Int. Cl.³ C25B *1/28*

U.S. Cl. 204—268 **7 Claims**



1. An electrolyzer for obtaining chemical products, consisting essentially of: a cell, the inner surface of said cell being made from a dielectric material; current leads which are nonsoluble and arranged within said cell; a bulk electrode consist-

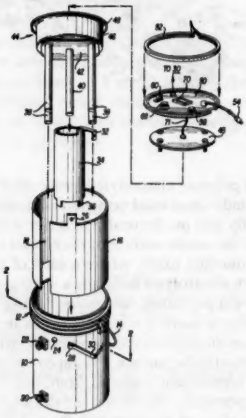
ing of a bed of pieces of conducting material, said pieces filling the space between said current leads and the walls of the cell; a coat of film on said pieces, said film obtained by chemical reaction with said pieces of conducting material and having reduced conductivity as compared to said conducting material and promoting the bipolar action of said pieces when said current leads are energized; and a means for discharging slime and products of electrolysis communicating with said cell.

4,269,690

ELECTROLYTIC APPARATUS FOR RECLAIMING DISSOLVED METAL FROM LIQUID

James M. Graham, III, Westminster, Md., assignor to Nancy Swartz Hammond, Baltimore, Md.

Filed Jan. 28, 1980, Ser. No. 116,191
Int. Cl.³ C25C *7/00, 7/02*
U.S. Cl. 204—272 **19 Claims**



1. An improved electrolytic apparatuss for reclaiming trace metals from liquids, comprising:

a container having an opening at its upper end;

a first substantially imperforate stationary cylindrical cathode located within said container in proximity to the side wall thereof;

a second substantially imperforate stationary cylindrical cathode located concentrically within said first cathode;

a plurality of stationary anode rods;

means for suspending said anode rods at least between said first and second cathodes; and

means for applying a voltage between said first and second cathodes, and said plurality of anode rods.

4,269,691

OXYGEN ELECTRODE PREPARATION

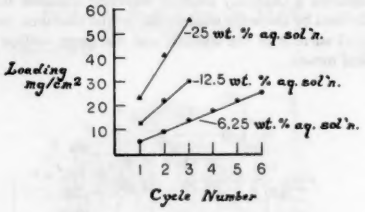
Gary A. Deborski, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 5, 1978, Ser. No. 939,600
Int. Cl.³ C25B *11/16;* **B05D** *5/12;* **H01M** *4/50*
U.S. Cl. 204—290 R **13 Claims**

1. Method of providing an electrocatalytically-active manganese oxide deposit on the interior pore wall surfaces of a porous electrode body comprising:

applying to the interior walls of the electrode body a liquid, anionic-manganese pyrolytic salt reagent selected from the group consisting of manganese nitrate, manganese carbonate, carboxylic acid salts of manganese containing up to about 20 carbon atoms in the organic acid radical portion of the salt, and mixtures thereof; then

heating the reagent-bearing electrode at a body temperature between one that is at least at about the decomposition temperature of the reagent and about 700° C. until the reagent decomposes to manganese oxide(s) layer deposit formations on said pore walls; and



washing and refining the deposit laden body with an aqueous hydrogen peroxide solution.

13. The product produced by the method of claims **1** or **2**.

4,269,692

COAL REFINING

Suresh P. Babu, Darien, and Richard A. Knight, Brookfield, both of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed Sep. 13, 1979, Ser. No. 75,279
Int. Cl.³ C10G *1/00*
U.S. Cl. 208—8 LE **12 Claims**

1. A process for fossil fuel refining by solvent extraction comprising:

contacting for about ½ to about 3 hours ground solid fossil fuel with solvent consisting essentially of phenol at a temperature of about 600° to about 690° F. and a corresponding saturation pressure of about 250 to about 430 psig, said phenol being present in greater amounts than said fossil fuel on a weight basis, said phenol dissolving refined product from said fossil fuel leaving a solid fuel residue;

removing said phenol containing refined product from said fuel residue while heated;

cooling and separating refined product from phenol; and recycling phenol.

4,269,693

PROCESS FOR RECOVERING BITUMEN FROM WASTE BITUMINOUS PRODUCTS

Anthony M. B. Hastie, Rose Cottage, Hoveringham, Nottinghamshire, United Kingdom

Filed May 23, 1979, Ser. No. 41,815
Claims priority, application United Kingdom, May 30, 1978, 24168/78
Int. Cl.³ C10C *1/00;* **B01D** *12/00*
U.S. Cl. 208—39 **11 Claims**

1. A process for recovering bitumen from weathered bituminous roofing felt products, said roofing felt products having embrittled and flexible layers with particulate on fibrous impurities therein, which comprises cooling said products to a temperature below the softening point of the bitumen therein, comminuting the cooled products, adding the comminuted products to water and collecting the material which floats on the water, melting the collected material and filtering the melted material to remove particulate or fibrous impurities therefrom and thereby recovering said bitumen.

4,269,694

METHOD OF REMOVING CONTAMINANT FROM A FEEDSTOCK STREAM

Eric O. Holland, Borger, Tex., and Marvin M. Johnson, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 1, 1979, Ser. No. 80,600
Int. Cl.[3] C10G 45/06, 65/02
U.S. Cl. 208—48 R 17 Claims

1. A method of hydrodesulfurizing a petroleum feedstock stream comprising:

contacting a contaminated petroleum feedstock stream containing feedstock contaminants with an adsorbent comprising activated bauxite effective to adsorb said feedstock contaminants to remove at least a portion of said contaminants therefrom to produce a purified petroleum feedstock stream; and

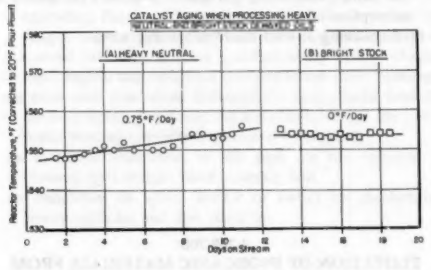
subsequently contacting said purified petroleum feedstock stream with a hydrodesulfurization catalyst under conditions effective for hydrodesulfurization to produce a purified hydrodesulfurized feedstock stream.

4,269,695

RECLAIMING WAX CONTAMINATED LUBRICATING OILS

Murray R. Silk, Cherry Hill, and Richard T. Cleveland, Turnersville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 1, 1979, Ser. No. 63,025
Int. Cl.[3] C10G 45/00, 45/62, 45/64
U.S. Cl. 208—111 16 Claims


CATALYST AGING WHEN PROCESSING HEAVY NEUTRAL AND BRIGHT STOCK DEWAXED OILS
(A) HEAVY NEUTRAL
(B) BRIGHT STOCK
0.75°F/Day
0°F/Day
Reactor Temperature, °F (Corrected to 20°F Run Point)
Days on Stream

1. A method for reclaiming a contaminated dewaxed lube base stock oil with an excessive tendency to form particulate wax when kept at a predetermined storage temperature, which method consists of: contacting said dewaxed oil and hydrogen in a single reaction zone at a temperature of 500° to 675° F., a hydrogen partial pressure of about 100 to 1500 psia, and at a space velocity higher than 2 up to about 10 LHSV with a catalyst comprising a crystalline aluminosilicate zeolite having a silica/alumina ratio of at least 12 and a Constraint Index of about 1 to about 12; and recovering at least 95 wt.% of a reclaimed lube base stock oil having a pour point not more than 20° F. lower than said contaminated oil, and which forms substantially no particulate wax at said storage temperature.

4,269,696

FLUID COKING AND GASIFICATION PROCESS WITH THE ADDITION OF CRACKING CATALYSTS

William J. Metrailer, Baton Rouge, La., assignor to Exxon Research & Engineering Company, Florham Park, N.J.

Filed Nov. 8, 1979, Ser. No. 92,471
Int. Cl.[3] C10G 11/18, 9/32, 51/04
U.S. Cl. 208—120 15 Claims

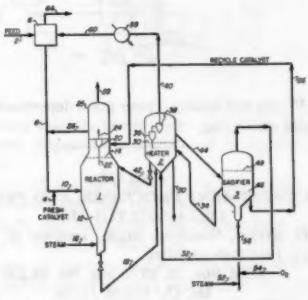
1. In an integrated coking and gasification process comprising the steps of:

(a) reacting a carbonaceous chargestock in a coking zone containing a bed of fluidized solids maintained at fluid coking conditions, including a total pressure of about 0 to 150 psig, in the absence of added hydrogen, to produce a vapor phase product including normally liquid hydrocarbons, and coke, said coke depositing on said fluidized solids;

(b) introducing a portion of said solids with the coke deposit thereon into a heating zone operated at a temperature greater than said coking zone temperature to heat said portion of said solids;

(c) recycling a first portion of heated solids from said heating zone to said coking zone;

(d) introducing a second portion of said heated solids to a fluid bed gasification zone maintained at a temperature greater than said heating zone, and



(e) reacting said second portion of heated solids in said gasification zone with steam and an oxygen-containing gas to produce a partially gasified coke and a gaseous stream comprising hydrogen,

the improvement which comprises adding to said carbonaceous chargestock solid cracking catalyst particles having a particle size of less than about 44 microns in diameter and recycling at least a portion of said partially gasified coke of step (e) to contact the vapor phase product above said bed of fluidized solids of said coking zone, said partially gasified coke comprising said cracking catalyst, said partially gasified coke serving as matrix wherein said cracking catalyst particles are dispersed.

4,269,697

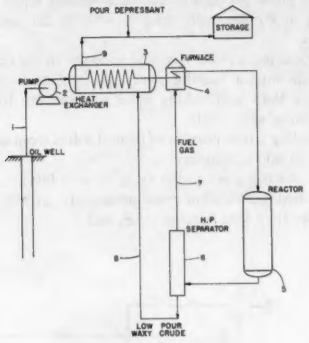
LOW POUR POINT HEAVY OILS

Nai Y. Chen, Titusville, and David S. Shihabi, Pennington, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Feb. 27, 1980, Ser. No. 125,006
Int. Cl.[3] C10G 11/05, 25/03, 73/38
U.S. Cl. 208—120 8 Claims

1. A process for treating a waxy crude petroleum which comprises contacting said crude petroleum with a crystalline zeolite characterized by a silica/alumina ratio greater than 12, and an acid activity measured by the alpha scale less than 10,

said contacting being conducted at 650° to 800° F., space velocity of 0.1 to 5.0 LHSV and a pressure not greater than



about 750 psig and adding a pour point depressant to the product of said contacting.

4,269,698

OIL TREATMENT PROCESSES, AND PRODUCTS OBTAINED THEREBY

James G. Kreger, Westland, Mich., assignor to Edwards Oil Service, Inc., Detroit, Mich.

Filed Nov. 28, 1979, Ser. No. 98,230
Int. Cl.³ C10M *11/00*
U.S. Cl. 208—180 **61 Claims**

1. A process for purifying waste oil, comprising the steps of:

admixing with the waste oil an aqueous solution of an alkali metal silicate;

maintaining the waste oil-silicate solution mixture at a temperature of from about 140 to about 200 degrees Fahrenheit;

wherein from about 0.001 to about 0.8 pounds of a silicate selected from the group consisting of

M_4SiO_4, $M_{2n}(SiO_3)_n$, and M_2SiO_5

where n is an integer of from about 1 to about 2, and M is an alkali metal, are mixed with each gallon of said waste oil;

wherein said aqueous solution of the alkali metal silicate contains from about 1.0 to about 10.0 percent, by weight of said solution, of said silicate;

wherein from about 1.0 to about 10.0 percent, by volume of said waste oil, of said aqueous solution of said silicate is added to said waste oil;

said waste oil and said solution of said alkali metal silicate are admixed until a lump structure appears in the oil; and

thereafter the admixture is allowed to settle for from about 6 to about 30 hours while being maintained at a temperature of from about 140 to about 200 degrees Fahrenheit, whereby an alkaline clear oil top fraction as well as an alkaline bottom fraction are produced.

4,269,699

BIOADSORPTION ALTERATION OF IRON SULFIDE SURFACES

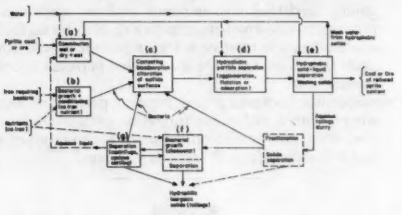
Ronald G. L. McCready, Lethbridge; Richard D. Coleman, Orleans; Charles E. Capes, Ottawa; Alan G. Kempton, and Nayera A. M. Moneib, both of Waterloo, all of Canada, assignors to Canadian Patents & Dev. Ltd., Ottawa, Canada

Filed Oct. 23, 1979, Ser. No. 87,698
Int. Cl.³ B03B *1/00*
U.S. Cl. 75—101 R **17 Claims**

1. A process for reducing the sulfur content of impure iron sulfide-containing minerals which include hydrophobic components comprising:

(a) subdividing the impure minerals until iron sulfide-containing surfaces are released from non-sulfide hydrophobic solids;

(b) conditioning or maintaining bacteria requiring iron for growth and being selected from the Thiobacillus and Ferrobacillus groups, and from recycled said bacteria, in an aqueous medium deficient in iron nutrient, to deplete bacterial iron reserves, thereby causing the bacteria to be



in condition to be rapidly adsorbed on fresh iron sulfide surfaces in order to restore depleted nutrient iron;

(c) contacting the subdivided mineral solids from (a) with the bacteria from (b) in an aqueous medium for a short time sufficient for adsorption of said bacteria on iron sulfide-containing surfaces but insufficient for significant enzymatic oxidation of said surfaces;

(d) separating the hydrophobic non-sulfide particles from the sulfide-containing particles rendered hydrophilic by adsorption of said bacteria; and

(e) recovering at least the hydrophobic solids.

4,269,700

FLOTATION OF INORGANIC MATERIALS FROM GLASS USING HYDROCARBON SULFONATES

William R. White, Pomona, Calif., assignor to Occidental Research Corporation, La Verne, Calif.

Continuation of Ser. No. 888,541, Mar. 21, 1978, abandoned.
This application Mar. 4, 1980, Ser. No. 127,192
Int. Cl.³ B03B *7/00*
U.S. Cl. 209—12 **29 Claims**

27. A process for recovery of glass from a particulate mixture of substantially inorganic materials including glass which comprises subjecting a particulate mixture of substantially inorganic materials including glass obtained from municipal solid waste, the inorganic materials other than glass constituting gangue and having a particle size less than about 10 mesh:

(i) to the action of an aqueous medium having a pH of from about 2 to about 4 and containing at least one glass suppressant material selected from the group consisting of mineral acids, and fluoride ion for a time sufficient to render the glass nonresponsive to the beneficiating action of at least one water compatible sulfonated hydrocarbon containing at least 5 carbon atoms; and

(ii) to the action of a beneficiating amount of said water compatible sulfonated hydrocarbon, the gangue being responsive to the beneficiating action of said water compatible sulfonated hydrocarbon;

and forming a float predominantly containing the gangue and a tailing predominantly containing glass.

4,269,701

CYCLONE SEPARATOR FOR THE REMOVAL OF HEAVY PARTICLES AND DUST PARTICLES FROM FIBRE MATERIAL

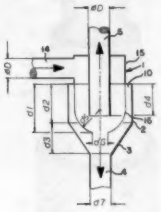
Franz Höck, Overath; Franz-Herbert Döpper, Bergisch Gladbach, and Gert Stock, Cologne, all of Fed. Rep. of Germany, assignors to Temafa Textilemaschinenfabrik GmbH, Fed. Rep. of Germany

Filed Aug. 27, 1979, Ser. No. 69,637

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1978, 2838173

Int. Cl.[3] B04C *5/103;* B07B *7/06*

U.S. Cl. 209—23 4 Claims



1. A cyclone separator for separating heavy particles and dust particles from fibre material, said separator comprising:

a cyclone housing;

a sieve sleeve or sieve member arranged inside the cyclone housing, said sieve member being substantially coaxial with the cyclone housing axis and having downwardly-extending flat bars the upper portions of which are arranged vertically, and the lower ends of which are bent or curved inwardly to form a substantially balloon-shaped sieve region that bounds a co-axial lower sieve opening;

an inlet tube that opens substantially tangentially into the cyclone housing and into the sieve member for the pneumatic feeding-in of the material to be cleaned;

an overflow immersion or dip pipe for the removal of cleaned light-weight fibre material; and

an underflow or apical nozzle or outlet for discharging heavy particles and dust particles.

4,269,702

ORE TREATMENT PROCESS

John A. Milner, and Roger M. Turner, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 29, 1978, Ser. No. 964,727

Claims priority, application United Kingdom, Dec. 8, 1977, 51132/77

Int. Cl.[3] B03D *1/06*

U.S. Cl. 209—166 4 Claims

1. A process for the recovery of metal concentrates from mineral ores containing a metal or metals in the form of their sulphides and/or oxides, in which the crushed ore is subjected to a froth flotation process in aqueous medium using, as collector, an ortho hydroxy phenyl oxime selected from the group consisting of 2-hydroxy, 3,5-ditertiary-butyl benzaldoxime, 2-hydroxy, 3-methyl, 5-tertiary-butyl benzaldoxime and 2-hydroxy, 5-methyl, 3-tertiary-butyl benzaldoxime.

4,269,703

SCREENING MACHINE

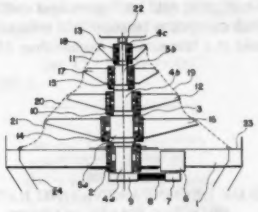
Johannes Brüderlein, Duisburg, Fed. Rep. of Germany, assignor to Siebtechnik GmbH, Fed. Rep. of Germany

Filed Mar. 12, 1979, Ser. No. 19,988

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1978, 2810587

Int. Cl.[3] B07B *1/06, 1/28*

U.S. Cl. 209—243 7 Claims



1. A screening machine comprising:

a. a vertically disposed crank shaft and means for rotating said shaft;

b. a plurality of spaced apart holders, alternative holders being eccentrically, but nonrotatably, mounted to said crank shaft, and said other holders being nonrotatably mounted to said crank shaft; and

c. a plurality of frustro-conical screens mounted to said holders and disposed between said holders such that rotation of said crank shaft imparts a substantially circular motion to the circular edges of the screens mounted to the eccentrically mounted holders.

4,269,704

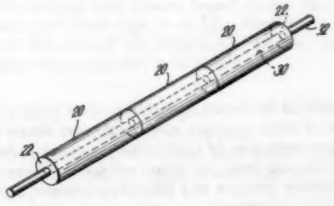
SCREEN FOR PARTICLE SEPARATION

Arnold B. Bower, Jr., Bristol, Va., assignor to General Electric Company, Detroit, Mich.

Filed Nov. 13, 1979, Ser. No. 93,237

Int. Cl.[3] B07B *1/46*

U.S. Cl. 209—393 16 Claims



1. A screen for separating particles comprising:

a plurality of rows of elongated members disposed in fixed, spaced parallel array, said elongated members being formed from segmented sections of a cemented carbide material, each said segmented section having an axial bore therein;

means for connecting said segmented sections to form said rows of elongated members, said means for connecting said segmented sections to form said rows includes a wire extending through the axial bores of said segmented sections to thereby align and fixedly hold said sections in a straight row; and

means for supporting said members in said array.

4,269,705

METHOD FOR REMOVING CHROMIUM IONS FROM AQUEOUS SOLUTIONS OF ORGANIC ACIDS

Teruhiko Yoshioka; Hideo Matsuzawa; Kazuya Okada, all of Otake, and Minoru Ikeda, Saiki, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1979, Ser. No. 31,157
Int. Cl.[3] B01D *15/04*
U.S. Cl. 562—600 7 Claims

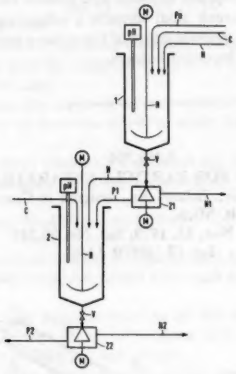
1. A method of removing chromium ions from an aqueous solution of an organic acid having an acid concentration of up to 95%, which comprises treating said solution with a cation exchange resin at a temperature higher than 55° C.

4,269,706

METHOD OF DECONTAMINATING RADIOACTIVE PROCESS WASTE WATERS

Thomas Sondermann, Kahl/Main, Fed. Rep. of Germany, assignor to Reaktor-Brennelment Union GmbH, Hanau, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 908,952, May 24, 1978, abandoned. This application Sep. 7, 1979, Ser. No. 73,521
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1977, 2724954
Int. Cl.[3] C02F *1/52*; G21F *9/10*
U.S. Cl. 210—682 5 Claims



1. A method for decontaminating process waste water having a pH of about 7, which is an ammonium nitrate solution, from the manufacture of nuclear fuel, containing radioactive isotopes selected from the group consisting of uranium isotopes, thorium isotopes and plutonium isotopes as contaminants, which comprises

(a) adding HNO_3 to the contaminated process water to reduce its pH to a value of about 5.8,

(b) adding a reagent selected from the group consisting of CaO and Ca $(OH)_2$ to the contaminated process water of about 5.8 pH in an amount sufficient to raise the pH of the water in the range of about 8.5 to about 10,

(c) agitating the mixture of the process water and the reagent for at least 5 minutes to effect intimate contact therebetween and produce a suspension in the water of solids containing radioactive contaminants, and

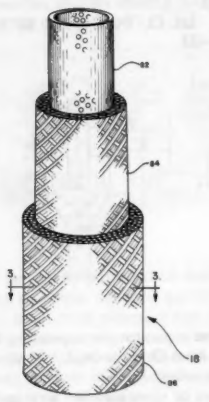
(d) centrifuging the water containing the suspended solids to separate the solids containing radioactive contaminants from the water from which radioactive contaminants have been removed in the solids.

4,269,707

APPARATUS AND METHOD

Donald J. Butterworth, Stirling; Christopher Halbfoster, Clark, and Robert Loudon, Howell, all of N.J., assignors to Ecodyne Corp., Chicago, Ill.

Continuation of Ser. No. 884,707, Mar. 8, 1978, abandoned. This application Nov. 13, 1979, Ser. No. 93,245
Int. Cl.[3] B01D *37/02*
U.S. Cl. 210—777 5 Claims



1. A filter element, precoated with particles in the size range of 60 to 400 mesh, consisting essentially of:

a perforated tubular core;

an inner layer of strand material wound about said core, said inner layer having a nominal particle retention number between twenty-five and one hundred microns;

an outer layer of strand material, wound about said inner layer, said outer layer having a nominal particle retention number between one and twenty-five microns; and

a precoat of particles in the size range of 60 to 400 mesh supported on said outer layer.

3. A method for purifying liquids comprising:

precoating a filter having layers of strand material with particles in the size range of about 60 to 400 mesh, said filter having an outermost layer with a nominal particle retention number less than the nominal particle retention number of the innermost layer of said filter with the nominal particle retention numbers gradually decreasing from the innermost layer to the outermost layer; delivering liquid to be filtered through said precoated particles and said filter; periodically backwashing said filter and removing said precoated particles; and precoating said filter with a fresh coating of particles in the size range of about 60 to 400 mesh.

4,269,708

HEMODIALYSIS AND/OR ULTRAFILTRATION APPARATUS

Vittorio Bonomini, Via Siepelunga 30, and Giovanni Ruggeri, Via Boves 4, both of Bologna, Italy

Filed May 3, 1979, Ser. No. 35,744
Claims priority, application Italy, May 3, 1978, 3415 A/78
Int. Cl.[3] B01D *31/00*
U.S. Cl. 210—90 8 Claims

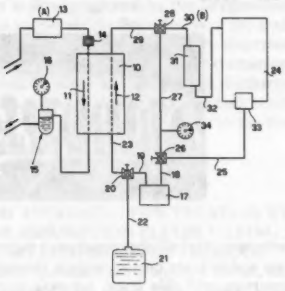
1. In a portable dialysis apparatus, of the type comprising a first circuit for blood and a second circuit for ultrafiltration and dialysis liquid, the exchange between the blood and the dialysis liquid taking place through a semipermeable membrane, the improvement comprising

(a) a pump means in each of said first and second circuits, each said pump means having a head and being of the type

in which a flexible tube is intermittently throttled by at least one element of said pump head, said pump head being maintained in throttling engagement with said tube for at least a length thereof;

(b) means for selectively connecting the output side of the pump means for said dialysis liquid either with the inlet of said dialyzer or with an ultrafiltrate collection station;

(c) means for selectively connecting the input side of pump means for said dialysis liquid with the outlet of the dialyzer either through a supply tank of dialysis liquid or directly via a shunt line;



(d) whereby ultrafiltration and dialysis are performable as first and second steps in sequence;

(e) a pressure meter being arranged in said shunt line upstream of the pump means for said dialysis liquid; and

(f) said supply tank for said dialysis liquid being provided with temperature control and adjustment means, and a filter for the absorption of toxic substances from the dialysis liquid being mounted between said outlet of said dialyzer and said supply tank.

4,269,709

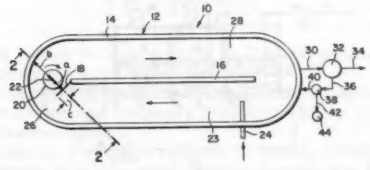
WASTE WATER TREATMENT SYSTEM WITH AERATION AND CIRCULATION MEANS

Paul I. Rongved, Notch Rd., Oak Ridge, N.J. 07438

Continuation of Ser. No. 884,746, Mar. 9, 1978, abandoned. This application Aug. 6, 1979, Ser. No. 64,033

Int. Cl.³ C02F *3/18, 1/74*

U.S. Cl. 210—195.3 **13 Claims**



1. In a horizontally disposed flowing liquid system in which the liquid changes flow direction from a first channel through a communication section into a second channel, means for simultaneously aerating and circulating said liquid comprising substantially vertical partition means cooperating with surface aerator means, said partition means extending from the inside wall of said first channel into said communication section and said surface aerator means rotating about a substantially vertical axis on the second channel side of said partition means, said axis of said surface aerator means being separated from said partition means at the closest point by a distance corresponding to about 1½ to 2 radii of said surface aerator means and an outer edge of said partition means extending past said closest point no more than a distance corresponding to about 1 said radius, said axis being separated from the closest point of the outside wall of said communication section by a distance corresponding to more than 2 said radii, whereby said aerator means is closer to said partition means than to said outside wall.

4,269,710

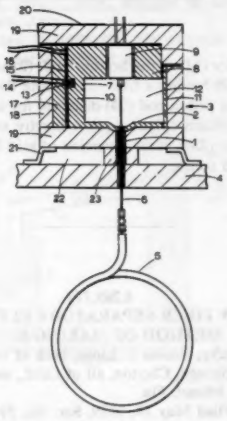
CHROMATOGRAPHIC APPARATUS

Richard J. Hunt, Cambridge, England, assignor to Pye Limited, Cambridge, England

Continuation of Ser. No. 653,919, Jan. 30, 1976, abandoned, which is a continuation of Ser. No. 397,660, Sep. 17, 1973, Pat. No. 3,954,616. This application Jul. 15, 1977, Ser. No. 815,939 The portion of the term of this patent subsequent to May 4, 1993, has been disclaimed.

Int. Cl.³ B01D *15/08*

U.S. Cl. 210—198.2 **5 Claims**



1. Chromatographic apparatus comprising:

a chromatographic separation column;

means for maintaining the temperature of said column at a first predetermined temperature;

a detector responsive to components eluted from said column;

conduit means which function to convey components from said column to said detector; and

means for heating said conduit means which function to conduct and retain heat from said detector along said conduit and prevent the formation of negative temperature gradients along said conduit means.

4,269,711

FILTER CENTRIFUGE

Hans Gerteis, Bietigheim-Bissingen, Fed. Rep. of Germany, assignor to Firma Heinkel Industriezentrifugen GmbH & Co., Fed. Rep. of Germany

Filed Mar. 6, 1978, Ser. No. 883,750

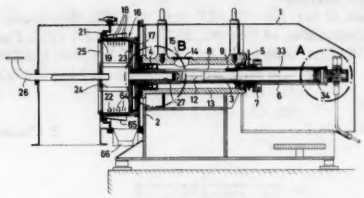
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1977, 2709894

Int. Cl.³ B01D *33/10*

U.S. Cl. 210—232 **9 Claims**

1. Filter centrifuge for the separation of solid and liquid components found in a suspension, with a centrifugal drum having radial discharge openings, which is positioned rotatably in a centrifuge housing, and is open at one front side, and with a filter cloth which can be installed in the drum, which is fastened removably on the one side to the opening edge of the drum which can be tightly sealed by a centrigue bowl cover, and on the other side with the base plate rigidly connected with the cover so as to leave a space between, wherein the centrifugal drum and the base plate are coaxial with one another, can be displaced in rotation together, and are movable

axially with respect to one another, and with a filling pipe extending centrally into the centrifuge bowl for introduction of the suspension, characterized in that the centrifugal drum (16) is fastened to a hollow shaft (3) positioned rotatably in a centrifuge housing (2) and which is not displaceable axially,



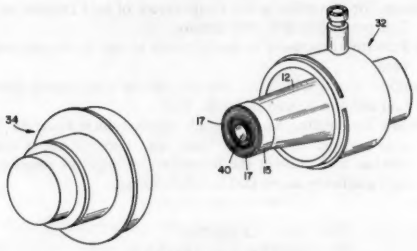
and the interior (11) of the hollow shaft (3) serves as a receiver for a shaft (12) having a free end remote from said base plate (23) forming a piston rod (33) disposed for axial movement in a pressure medium cylinder (6), whereby axial movement of said base plate (23) causes inversion of said filter cloth (22) to discharge said solids.

4,269,712

HOLLOW FIBER SEPARATORY ELEMENT AND METHOD OF MAKING SAME

Roger B. Hornby; Bennie J. Lipps, both of Walnut Creek, and Charles E. Savage, Clayton, all of Calif., assignors to Cordis Dow Corp., Miami, Fla.

Filed May 14, 1979, Ser. No. 39,066
Int. Cl.³ B01D *13/00*
U.S. Cl. 210—321.3 **13 Claims**



1. A separatory element comprising a bundle of continuously hollow semipermeable fibers, said bundle comprising a plurality of elongated fibers having a central portion and two opposite terminal portions, a solidified castable resin tubesheet on each said terminal portion joining the exteriors of said fibers to each other,

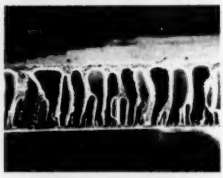
each said tubesheet having an axially extending disc portion integral with an outer frusto-tapered portion tapering axially outwardly and radially inwardly from the axial outer surface of said disc portion and terminating in an outer end planar surface, said fibers extending through said disc portion and said frusto-tapered portion of said tubesheet and terminating in open ends lying in the outer end planar surface of said frusto-tapered portion, at least a portion of said disc adjacent its axial inner end having a peripheral surface tapering radially and axially outwardly from said inner end.

4,269,713

ETHYLENE-VINYL ALCOHOL COPOLYMER MEMBRANE AND A METHOD FOR PRODUCING THE SAME

Shuzo Yamashita; Syuji Kawai; Hirokuni Tanii, all of Kurashiki, and Koichi Takakura, Okayama, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Aug. 31, 1979, Ser. No. 71,671
Claims priority, application Japan, Sep. 7, 1978, 53-110259; Apr. 30, 1979, 54-53730
Int. Cl.³ B01D *39/18, 31/00, 13/00*
U.S. Cl. 210—500.2 **6 Claims**



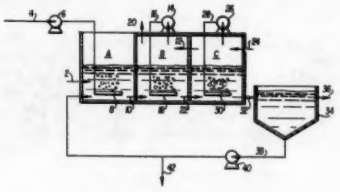
1. An ethylene-vinyl alcohol copolymer membrane comprising at least a skin layer on the surface thereof and a porous layer supporting said skin layer, wherein said porous layer, when said membrane is observed in the dry state with an electron microscope, comprises a plurality of vacuoles or voids, which present a mono- or multi-layer structure, with an average straight-line length corresponding to 20–99% of the whole thickness of the membrane, and the polymer portion of said porous layer comprises micropores with an average diameter of 0.1–5 microns, and said membrane has a porosity of 60–90%.

4,269,714

ACTIVATED SLUDGE TREATMENT METHOD OF WASTE WATER

Muneharu Ishikawa, and Kazuo Kimoto, both of Hiranomachi, Japan, assignors to Osaka Gas Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 905,942, May 15, 1978, abandoned. This application Jan. 4, 1980, Ser. No. 109,626
Claims priority, application Japan, Apr. 15, 1978, 53-44708
Int. Cl.³ C02F *3/26*
U.S. Cl. 210—627 **1 Claim**



1. A method for treatment of waste water containing a BOD component with activated sludge which comprises introducing said waste water and an effective amount of said activated sludge to adsorb said BOD component into a first open treatment zone, micronizing said activated sludge in the waste water in said first open treatment zone to an average floc size of about 160 microns or less but not to such a degree as to have the cells of microorganisms therein broken or destroyed and adsorbing the BOD component on the micronized sludge; transferring the thus treated sludge-containing water to a second substantially closed treatment zone and bringing it into contact with an oxygen-containing circulating gas having an oxygen concentration of not less than 30% by volume to oxidize the BOD component adsorbed on the sludge with flocculation of the sludge under the condition of the dissolved oxy-

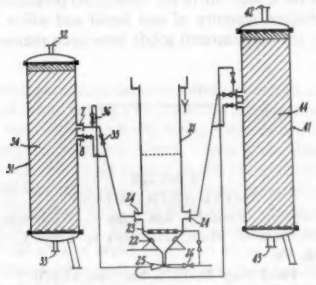
gen concentration being not less than 2 mg/liter, during which the sludge-containing water is slowly agitated by the oxygen-containing circulating gas to permit flocculation of the sludge and to maintain the flocculated sludge in an evenly dispersed state; transferring the thus treated sludge-containing water to a third substantially closed treatment zone and bringing it into contact with an oxygen containing circulating gas having an oxygen concentration of not less than 35% by volume to oxidize the BOD component adsorbed on the sludge, accelerate the flocculation of the sludge and auto-oxidize the flocculated sludge under the condition of the dissolved oxygen concentration being not less than 5 mg/liter, during which the sludge-containing water is slowly agitated by the oxygen-containing circulating gas to accelerate the flocculation of the sludge and maintain the flocculated sludge in an evenly dispersed state; and then introducing the thus treated sludge-containing water into a settling tank to settle the sludge and discharging the resulting supernatant liquid from the settling tank while recycling at least a portion of the settled sludge to the first open treatment zone.

4,269,715

PROCESS AND APPARATUS FOR TREATING BY ION EXCHANGE OR ADSORPTION FLUIDS HAVING SOLID PARTICLES SUSPENDED THEREIN

Christian Barraque, Sannois; Jean Burriat, Clamart, and Jean-Marie Rovel, Carrieres sur Seine, all of France, assignors to Degremont, Rueil-Malmaison, France

Filed Dec. 3, 1979, Ser. No. 99,719
Claims priority, application France, Dec. 8, 1978, 78 34555
Int. Cl.³ B01J *49/00*
U.S. Cl. 210—675 **18 Claims**



1. A process for treating fluids having solid particles suspended therein, said process comprising:

providing a treatment column having an interior including a treatment zone completely filled with a bed of granular treatment material;

conducting a treatment operation by passing a fluid to be treated in a downward direction through said bed of treatment material, thereby treating said fluid with said treatment material, and causing solid particles suspended in said fluid to be removed therefrom by an upper portion of said bed of treatment material and retained therein;

periodically conducting a regeneration operation and regenerating said bed of treatment material by passing a regenerating agent in an upward direction through said bed of treatment material in said treatment zone within said treatment column; and

periodically, upon a predetermined clogging of said bed of treatment material due to accumulated retention in said upper portion thereof of said solid particles, interrupting said treatment operation in said treatment column and conducting a washing operation comprising:

removing said upper portion only of said bed of treatment material from said treatment column by flowing said upper portion in a downward direction from said treatment column;

introducing the thus removed upper portion of said bed of treatment material into a washing column separate from said treatment column;

within said washing column, washing said portion of said treatment material and removing therefrom said solid particles, to thereby form washed treatment material; and

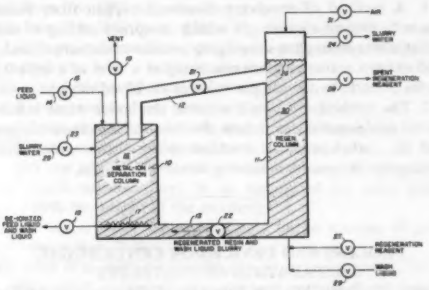
returning said washed treatment material from said washing column to said treatment zone to thereby replace said upper portion of said bed of treatment material.

4,269,716

ION EXCHANGE SEPARATION METHOD

Marshall I. Gurian, Tempe, Ariz., assignor to Advanced Systems, Inc., Phoenix, Ariz.

Filed Jan. 28, 1980, Ser. No. 115,939
Int. Cl.³ B01J *47/10*
U.S. Cl. 210—675 **1 Claim**



1. In a moving-bed ion exchange separation method for selectively separating metal ions from a feed liquid, including the steps of

contacting said feed liquid in a separating zone with granular ion exchange resin to sorb said metal ions onto said resin,

withdrawing said feed liquid substantially free of said ions from said separation zone,

withdrawing ion exchange resin loaded with said metal ions from said separation zone,

treating said loaded resin in a regeneration zone with a regeneration reagent liquid to desorb said ions from said resin,

withdrawing spent regeneration reagent liquid from said regeneration zone,

washing the regenerated ion exchange resin in said regeneration zone with a wash liquid, and

recycling said regenerated resin to said separation zone for contact with additional feed liquid,

the improvement in said method whereby the volume of spent wash liquid and treated feed liquid is reduced, said method comprising the steps of:

(a) introducing said feed liquid into the top portion of said separating zone for downflow therewithin and contact with said ion exchange resin;

(b) introducing said regeneration reagent liquid into the lower portion of said regeneration zone for flow upwardly therethrough and regenerating contact with a quantity of said loaded granular ion exchange resin therewithin;

(c) interrupting the flow of said regeneration reagent liquid through said regeneration zone;

(d) introducing said wash liquid into the lower portion of said regeneration zone to wash regenerated resin and to displace said regeneration reagent liquid upwardly therewithin;

(e) withdrawing at least a portion of said regenerated resin

and wash liquid from the lower portion of said regeneration zone;

(f) introducing said withdrawn regenerated resin and wash liquid into the lower portion of said separation zone;

(g) withdrawing loaded ion exchange resin from the top of said separation zone and introducing said withdrawn loaded resin into the top of said regeneration zone; and

(h) withdrawing de-ionized feed liquid and wash liquid from the lower portion of said separation zone.

4,269,717

BOILER ADDITIVES FOR OXYGEN SCAVENGING

Manuel Slovinsky, Woodridge, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 140,965, Apr. 17, 1980, abandoned, which is a continuation-in-part of Ser. No. 46,121, Jun. 6, 1979, abandoned. This application Oct. 6, 1980, Ser. No. 194,349

Int. Cl.³ C02F *1/20, 1/70*

U.S. Cl. 210—750 **6 Claims**

1. A method of removing dissolved oxygen from boiler water having an alkaline pH which comprises adding to said boiler water an oxygen scavenging amount of carbohydrazide, said oxygen scavenging amount being at a level of a least 0.5 moles of carbohydrazide per mole of dissolved oxygen.

2. The method of claim 1 wherein the boiler water is subjected to deaeration to reduce the level of dissolved oxygen and the carbohydrazide is added to the boiler water after deaeration to remove remaining dissolved oxygen.

4,269,718

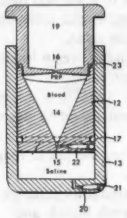
PROCESS AND DEVICE FOR CENTRIFUGAL SEPARATION OF PLATELETS

Maxim D. Persidsky, San Francisco, Calif., assignor to The Institutes of Medical Sciences, San Francisco, Calif.

Filed May 5, 1980, Ser. No. 146,461

Int. Cl.³ B01D *21/26*

U.S. Cl. 210—787 **12 Claims**



8. The method of separating platelets from a blood sample comprising

(a) supporting the blood sample in a centrifugal chamber having inner and outer ends,

(b) subjecting the chamber to an intial centrifugal force of at least a predetermined minimum to stratify red cells in the sample away from the inner end, and

(c) subjecting the chamber to a second centrifugal force while (1) injecting into the outer end of the chamber from a cavity, a displacing liquid having a volume of between 0.2 and two times the volume of plasma in the sample at a flow rate less than about 1.0 ml. per minute per ml. of the blood sample, and (2) displacing platelet rich plasma from the inner end of the chamber at substantially the same volume and rate with the displacing liquid ejected from the cavity by the second centrifugal force on the blood sample.

4,269,719

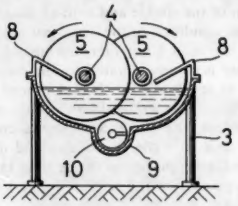
SLURRY DEHYDRATING APPARATUS

Morio Yamamoto, 2780-12 Haracho 2-chome, Suita-shi, Osaka, Japan

Filed Aug. 13, 1979, Ser. No. 65,942

Int. Cl.³ B01D *21/00*

U.S. Cl. 210—803 **10 Claims**



9. A method of dehydrating a liquid containing solids utilizing a vessel open at the upper side and adapted to receive the liquid, at least one rotatable shaft extending substantially horizontally over said open side, and a row of spaced discs mounted on said shaft and rotatable therewith, said method comprising the steps of flowing a quantity of the liquid and the solids into the vessel to cover the lower portions of the discs, slowly rotating the discs to carry a portion of the liquid and the solids upwardly and expose them to air above the liquid, continuing to rotate the discs at a rate slow enough to permit substantially all of the liquid to evaporate from the discs and thereby concentrate the solids, removing the concentrated solids from the discs, periodically removing the concentrated solids from the lower side of the vessel, and periodically flowing an additional quantity of said liquid and solids into said vessel after the concentrated solids have been removed.

4,269,720

AMINE ANTIOXIDANT

John D. Bartleson, Franklin, and John C. Wollensak, Bloomfield Hills, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Filed May 29, 1979, Ser. No. 42,970

Int. Cl.³ C08K *5/18;* C10L *1/22;* C10M *1/34, 3/28*

U.S. Cl. 252—50 **7 Claims**

1. Organic material normally susceptible to gradual degradation in the presence of oxygen during use over an extended period containing an antioxidant amount of N-(2-amino-3-ethyl-α-methylbenzylidene)-2,6-diethylaniline.

4,269,721

DUST ABATEMENT WITH CALCIUM SULFATE

Klaus W. Mueller, Yonkers, and Norman R. Olsen, Peekskill, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 21, 1979, Ser. No. 106,322

Int. Cl.³ C09K *3/22*

U.S. Cl. 252—88 **5 Claims**

1. A method of allaying dusting and moisture penetration of stored coal comprising covering the stored coal with sufficient amount of an aqueous mixture of a calcium sulfate containing composition to form a hardened crust over the stored coal.

4,269,722

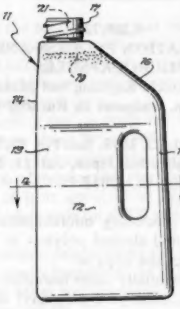
BOTTLED PARTICULATE DETERGENT

David Joshi, Piscataway, N.J., and Richard Klingaman, Houston, Tex., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 727,838, Sep. 29, 1976, abandoned. This application Dec. 21, 1978, Ser. No. 964,037

Int. Cl.[3] C11D *17/06*

U.S. Cl. 252—90 12 Claims



1. A bottled particulate laundry detergent which comprises a transparent bottle having a neck portion for dispensing detergent from the bottle, the bottle being made of a thin-walled synthetic organic polymeric plastic which is essentially moisture proof, the neck being located at the top of the bottle and adjacent one side and having a passageway therethrough with a cross-sectional area of less than 40% of the average cross-sectional area of the bottle, wherein said neck passageway has a cross-sectional area of about from 2 to 40 sq. cm., the bottle being provided further with an integral hollow handle located on the side of the bottle opposite that of the neck, wherein the interior of said handle communicates with other interior portions of the bottle, and said handle has an internal cross-sectional area in the range of about from 1 to 10 sq. cm., and a free-flowing particulate detergent in said bottle, pourable through said neck and handle, the particles of which comprises from about 2 to 50% by weight of a synthetic organic detergent selected from the group consisting of nonionic detergents and mixtures of said nonionic detergents with anionic detergents, wherein said nonionic detergent is a normally liquid or tacky ethoxylated detergent, and from about 50 to 90% by weight of builders for said detergent, wherein said builders are selected from the group consisting of ion-exchanging clays, organic builders and sodium salts of at least one of bicarbonates, borates, carbonates, phosphates and silicates, said particles sized such that at least 90% thereof pass through an 8 mesh screen and are retained on a 200 mesh screen (U.S. Sieve Series), are of a bulk density of at least 0.5 g/cc., are of a flowability sufficiently high so that detergent flows freely through the neck and handle of said bottle, and are substantially dust-free so that after pouring some of said composition from said bottle the bottle and the contained volume above the level of the particulate detergent composition return to a transparent condition, and a resealable cap for said neck portion.

4,269,723

PROCESS FOR MAKING A LAVATORY CLEANSING BLOCK AND USE

Eric D. Barford, Thetford; Robin A. Gray, Attleborough, and Michael R. Saul, Hockwold, all of England, assignors to Jeyes Group Limited, Norfolk, England

Filed Mar. 20, 1979, Ser. No. 22,300

Claims priority, application United Kingdom, Mar. 21, 1978, 11218/78

Int. Cl.[3] C11D *17/00, 3/50, 3/48*

U.S. Cl. 252—106 25 Claims

1. A process for the preparation of a lavatory cleansing tablet adapted for immersible use in the cistern of a lavatory which comprises forming a free-flowing particulate mixture consisting essentially of:

(a) from 5 to 90% by weight of a surface active component comprising one or more organic surface active agents;

(b) from 0.5 to 75% by weight of one or more binders which act as dissolution retarding agents selected from clays and water-soluble or water-dispersible gel-forming organic polymeric materials;

(c) from 0 to 20% of one or more dyestuffs;

(d) from 0 to 35% by weight of a perfume component comprising a solid perfume or a liquid perfume optionally in admixture with a solid absorbent therefor;

(e) a total of from 0 to 75% by weight of:

(i) one or more inert water-soluble fillers;

(ii) one or more water-softening or chelating agents;

(iii) one or more solid water-soluble acids;

(iv) one or more inert water-insoluble inorganic or polymeric organic fillers (in an amount of not more than 50% by weight of the mixture);

(v) one or more tablet lubricants (in an amount of not more than 30% by weight of the mixture);

(f) from 0 to 20% by weight of one or more germicides, fungicides, and/or chlorine release agents; and compressing the mixture to form a tablet.

4,269,724

COMPOSITION FOR PAINT STRIPPER

James V. Hodson, 1650 E. 500 South, Fruit Heights, Utah 84037

Filed Feb. 13, 1980, Ser. No. 121,304

Int. Cl.[3] C11D *7/50*; C23G *5/02*

U.S. Cl. 252—171 8 Claims

1. A finish remover composition comprising methylene chloride and iso-propyl alcohol as active solvents, said methylene chloride and iso-propyl alcohol being present in a weight ratio of about 3:1 and an amine-glycolate acid salt formed by the addition of about 2% by volume mono-ethanolamine and about 5% by volume of a water-glycolic acid mixture based on the volume of the composition so as to form a pH of about 5.

4,269,725

WASHING COMPOSITIONS

Eileen Smith, Runcorn, and David A. Morgan, Queen's Park, both of England, assignors to Laporte Industries Limited, London, England

Filed Apr. 3, 1978, Ser. No. 892,966

Claims priority, application United Kingdom, Apr. 21, 1977, 16701/77; Aug. 5, 1977, 32876/77; Jan. 19, 1978, 2263/78

Int. Cl.[3] C11D *10/02, 7/02*

U.S. Cl. 252—174.25 5 Claims

1. A washing composition comprising from 5 to 95% by weight of at least one surfactant and from 95 to 5% by weight of a mixture of zeolite 13X and xeolite 4A, the weight ratio of zeolites 13X:4A being in the range of 85:15 to 65:35.

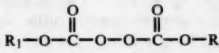
4,269,726

COMPOSITIONS COMPRISING ASYMMETRICAL PEROXYDICARBONATES AND METHODS FOR THEIR USE

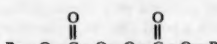
James R. Kolczynski, Clarence Center, and Gerald A. Schultz, Lockport, both of N.Y., assignors to Akzona Incorporated, Ashville, N.C.

Filed Dec. 26, 1979, Ser. No. 107,999
Int. Cl.[3] C07C 179/14; C01B 13/00
U.S. Cl. 252—186 2 Claims

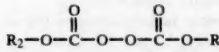
1. A composition comprising from about 25 to about 70 molar percent of an asymmetrical peroxydicarbonate of the formula



from about 15 to about 45 molar percent of a first symmetrical peroxydicarbonate of the formula



and from about 15 to about 45 molar percent of a second symmetrical peroxydicarbonate of the formula



wherein R_1 is isopropyl and R_2 is sec-butyl.

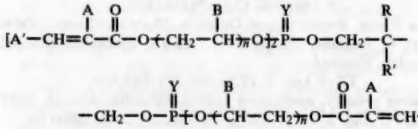
4,269,727

RADIATION CURABLE FLAME RETARDANT COMPOSITIONS CONTAINING 2,2-DIALKYLPROPANE-1,3-DIOLBIS[BIS-(ACRYLOYLOXYLKYL) PHOSPHATES]

George J. Atchison; Gerald K. McEwen, and Violete L. Stevens, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 960,383, Nov. 13, 1978. This application Oct. 5, 1979, Ser. No. 82,191
Int. Cl.[3] C08F 2/48; C09F 9/09
U.S. Cl. 252—188.3 R 5 Claims

1. A radiation curable composition comprising (1) a compound of the formula:



wherein A is hydrogen or methyl; A′ is hydrogen, methyl, phenyl or halogen; n is 1 or 1.5 and when n is 1, B is hydrogen or methyl and when n is 1.5, B is hydrogen; Y is oxygen or sulfur; R and R′ are hydrogen, methyl, chloromethyl or bromomethyl and (2) a photoinitiator.

4,269,728

METHOD FOR STORING SPENT NUCLEAR FUEL IN REPOSITORIES

Donald G. Schweitzer, Bayport; Cesar Sastre, Shoreham, and Warren Winsche, Bellport, all of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 21, 1979, Ser. No. 68,359
Int. Cl.[3] G21F 9/34
U.S. Cl. 252—301.1 W 5 Claims

1. In a method for storing spent fuel elements from nuclear reactors wherein the elements are immersed in a storage medium in a repository, the improvement which comprises said medium being elemental sulfur.

4,269,729

MICROENCAPSULATION PROCESS AND RESULTING MICROCAPSULES

Hitoshi Maruyama; Koichi Kajitani, and Makoto Shiraishi, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Jul. 23, 1979, Ser. No. 59,733
Claims priority, application Japan, Jul. 21, 1978, 53-89843
Int. Cl.[3] B01J 13/02
U.S. Cl. 252—316 12 Claims

1. A process for producing microcapsules having walls formed from a polyvinyl alcohol polymer in an aqueous medium, which comprises the steps of:

(a) dispersing a substantially water insoluble nuclear material in an aqueous solution of a polyvinyl alcohol polymer, which solution has a cloud point;

(b) phase separating and depositing a concentrated aqueous solution of the polyvinyl alcohol polymer as a separated phase around said nuclear material from the bulk continuous phase in the absence of a substance which induces the phase separation by maintaining the temperature of the system above the cloud point of the aqueous polyvinyl alcohol polymer solution; and

(c) subjecting the phase separated solution to conditions which substantially solidify or gel said polyvinyl alcohol polymer in said concentrated aqueous solution of said separated phase around said nuclear material but which do not substantially solidify or gel the polyvinyl alcohol in the diluted aqueous solution of the continuous phase.

12. Microcapsules prepared by the process of claim 1.

4,269,730

SUBSTITUTED IMIDAZOLINE REACTIONS WITH CHLOROACETATE SALTS

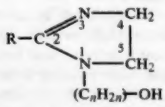
Joseph R. Wechsler, Chicago; Thomas G. Baker, Wilmette; George T. Battaglini, Buffalo Grove, and Frank L. Skradski, Grayslake, all of Ill., assignors to Stepan Chemical Company, Northfield, Ill.

Continuation-in-part of Ser. No. 901,713, May 1, 1978, abandoned. This application Aug. 28, 1979, Ser. No. 70,537
Int. Cl.[3] B01F 17/28, 17/30; C11D 1/10
U.S. Cl. 252—356 11 Claims

1. A process for making an amphoteric surfactant composition having low skin irritation and low eye irritation characteristics comprising the steps of

(A) first heating an agitated mixture comprised of

(1) at least one substantially pure compound of the formula:



where:

R is an aliphatic radical containing from about 5 to 19 carbon atoms per molecule, and

n is a positive whole number of from 2 to 4, inclusive,

(2) at least one chloroacetate salt wherein the cationic portion thereof is selected from the group consisting of alkali metal, ions, and

(3) water

said mixture containing the equivalent of from about 1.0 to 2.5 moles of said chloroacetate salt for each mole of said formula compound, and further containing a quantity of water such that said mixture comprises from about 20 to 50 weight percent solids on a 100 weight percent total said mixture basis, said first heating being conducted at a temperature ranging from about 70° to 80° C. for a time sufficient to substantially completely consume said chloroacetate salt,

(B) mixing with the resulting reactant mixture from about 1 to 2.5 moles, corresponding to the equivalent molar amount of chloroacetate salt added to said reactant mixture in step A of at least one base selected from the group consisting of alkali metal hydroxides, and then

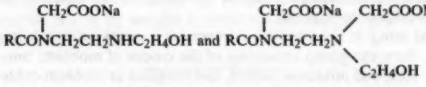
(C) secondly heating the resulting reactant mixture at a temperature of from about 70° to 80° C. at least until substantially all of the imidazoline rings present in said resulting reactant mixture have opened, thereby forming a clear aqueous solution of from about 15 to 35 weight percent linear amphoteric compounds on a 100 weight percent total solution basis.

4. The composition produced by the process of claim 1 said composition having a foamability of at least about 16 centimeters by the Ross-Miles test procedure, said composition being further characterized by

(A) having a stability such that said composition remains a clear solution after at least about 7 days of storage at 5° C.,

(B) containing an amphoteric compound having a tertiary amide function in which one of the substituents on the tertiary nitrogen is either $-CH_2CH_2OH$ or $-CH_2COONa$, said amphoteric compound being present in the amount of at least 25% by weight of total ampholyte, and

(C) containing at least one of the linear ampholytes of the formulae:



said linear ampholyte being present in the amount of at least 10% by weight of total amphoteric compounds.

4,269,731
ANTIMONY MERCAPTOCARBOXYLIC ACID ESTER STABILIZERS FOR POLYVINYL CHLORIDE RESIN COMPOSITIONS AND PROCESS

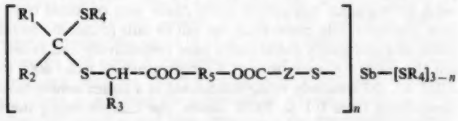
Gerry Mack, Jackson Heights, N.Y., assignor to Argus Chemical Corporation, Brooklyn, N.Y.

Filed Aug. 27, 1979, Ser. No. 69,959

Int. Cl.³ C09K *15/12*; C08K *5/09, 5/36*

U.S. Cl. 252—400 R **56 Claims**

1. Antimony mercaptocarboxylic acid esters having the formula:



wherein:

R_1 is selected from the group consisting of hydrogen, alkyl having from one to about eighteen carbon atoms and alkylene linked with R_2 in a ring having from three to about eight carbon atoms;

R_2 is selected from the group consisting of alkyl having from one to about eighteen carbon atoms, phenyl, and alkylene linked with R_1 in a ring having from three to about eight carbon atoms;

R_3 is selected from the group consisting of hydrogen and alkyl having from one to three carbon atoms;

R_4 is selected from the group consisting of alkyl, aryl, alkylaryl, alkoxycarbonyl-alkylene and acyloxyalkylene having from three to about twenty carbon atoms, the alkylene having from two to about six carbon atoms;

R_5 is selected from the group consisting of alkylene and cycloalkylene having from one to about eighteen carbon atoms, and such groups having from one to four hydroxyl groups;

Z is a bivalent alkylene group having from one to five carbon atoms and carrying the sulfur in a position alpha or beta to —OOC—; and

n is a number from 1 to 3.

4,269,732
OLEFIN POLYMERIZATION CATALYSTS

Andras G. T. G. Kortbeek, and Wilhelmina J. M. van der Linden-Lemmers, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 17, 1979, Ser. No. 58,406

Claims priority, application United Kingdom, Jul. 25, 1978, 30970/78

Int. Cl.³ C08F *4/64*

U.S. Cl. 252—429 B **8 Claims**

1. In the process for the preparation of an olefin polymerization catalyst component comprising reducing $TiCl_4$ with an organoaluminum compound in the presence of a dialkyl ether, the improvement of reducing $TiCl_4$ with an aluminum trihydrocarbyl compound in a molar ratio of Ti:Al of 2.7:1 to 4.0:1 in the presence of diisoamyl ether and a hydrocarbon solvent by gradually adding $TiCl_4$ to the aluminum trihydrocarbyl compound and at least a substantial proportion of the diisoamyl ether at a temperature of from 15° to 50° C. during a period of from 0.7 to 2.5 hours to produce a precipitate of $TiCl_3$, and thereafter converting said precipitate into active $TiCl_3$ by heating at a temperature of from 80° to 110° C. during at least 30 minutes.

4,269,733
ULTRA HIGH EFFICIENCY CATALYST FOR POLYMERIZING OLEFINS

Randall S. Shipley, Alvin, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 28, 1979, Ser. No. 79,773

Int. Cl.³ C08F *4/64, 4/68, 4/62*

U.S. Cl. 252—429 C **9 Claims**

1. The catalytic reaction product of

(A) the reaction product or complex formed from the admixture of

(1) at least one transition metal compound represented by the formulae $Tm(OR)_yX_{x-y}$ or $Tm(OR)_{x-2}O$ wherein Tm is a transition metal selected from groups IVB, VB or VIB; each R is independently a hydrocarbyl group, having from 1 to about 20 carbon atoms; each X is independently a halogen; x has a value equal to the valence of Tm and y has a value from 1 to the valence of Tm; and

(2) at least one zinc compound represented by the formulae R_2Zn and RZnX wherein each R is independently a hydrocarbyl group having from 1 to about 20 carbon atoms and X is a halogen; and

(B) a magnesium halide resulting from the reaction of

(1) an organomagnesium compound represented by the formula $MgR''_{2-x}MR''_y$ wherein M is aluminum or zinc, each R'' is independently a hydrocarbyl or hydrocar-

byloxy group having from 1 to about 20 carbon atoms, x has a value from zero to 10 and y has a value corresponding to the valence of M; with

(2) a halide source selected from

(a) an active non-metallic halide, said non-metallic halide corresponding to the formula R'X wherein R' is hydrogen or a hydrocarbyl group such that the hydrocarbyl halide is at least as active as sec-butyl chloride and does not poison the catalyst and X is halogen or

(b) a metallic halide corresponding to the formula $MR_{y-a}X_a$ wherein M is a metal of Group IIB, and IIIA or IVA of Mendeleev's Periodic Table of Elements, R is a monovalent hydrocarbyl radical, X is halogen, y is a number corresponding to the valence of M and a is a number of 1 to y; and

(C) when the organomagnesium component and/or the halide source provides insufficient quantities of aluminum, an aluminum compound represented by the formula $AlR_{y'}X_{y''}$ wherein R and X are as defined above and y' and y'' each have a value of from zero to three with the sum of y' and y'' being three; and

wherein the components are employed in quantities which provide an atomic ratio of the elements Mg:Tm of from about 1:1 to about 2000:1; Zn:Tm at least about 0.03:1; Al:Tm of from about 0.1:1 to about 2000:1 and an excess X:Al of from about 0.0005:1 to about 10:1.

4,269,734

PROCESS FOR PRODUCING HYDROPEROXIDES

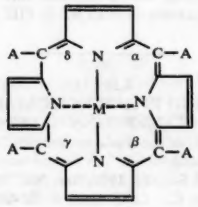
Michael E. Coltrin, Champaign, Ill., and Yulin Wu, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 883,018, Mar. 3, 1978, Pat. No. 4,202,992. This application Jan. 24, 1980, Ser. No. 114,923

Int. Cl.³ B01J *31/22*

U.S. Cl. 252—430 **7 Claims**

1. A composition comprising at least one porphine complex having the formula



wherein M is Ni (II) or Cu (II), each A is individually selected from the group consisting of hydrogen, alkyl, or aryl radicals, and at least one A is an aryl radical, supported on magnesium oxide or calcium oxide.

4,269,735

MAGNESIUM OXIDE CATALYST

Bruce E. Leach, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Jan. 21, 1980, Ser. No. 113,991

Int. Cl.³ B01J *27/02, 21/18, 29/00*

U.S. Cl. 252—440 **5 Claims**

1. A catalyst for the alkylation of phenol and phenolic material, comprising magnesium oxide promoted with from about 0.5% to about 15.0% by weight of amorphous titanium, uranium, zirconium and chromium ions or mixtures of these, together with from about 0.50% to about 15% by weight of sulfate ion, all based on the total weight of the final catalyst.

4,269,736

PARAFIN CONVERSION CATALYST

Thomas M. Notermann, South Charlston, W. Va., assignor to Norton Company, Worcester, Mass.

Filed Nov. 14, 1979, Ser. No. 93,976

Int. Cl.³ B01J *29/22*

U.S. Cl. 252—455 Z **5 Claims**

1. A catalyst for the conversion of hydrocarbons, said catalyst comprising one or more platinum-group metals supported on a crystalline alumino-silicate, and said catalyst being prepared by drying in an atmosphere containing water vapor at low temperatures and in the presence of a mild organic acid during periods after incorporation of the metal into the zeolite and prior to the catalytic reaction, whereby an aquo complex of the platinum group metal is formed.

2. A catalyst for the conversion of hydrocarbons, said catalyst comprising one or more platinum group metals supported on a crystalline alumino-silicate zeolite, and said catalyst being prepared, after impregnation in an aqueous solution containing ions of said one or more platinum group metals, by drying in an atmosphere containing at least 30,000 ppm of water, at a temperature of between 25° and 200° C.

4,269,737

METHOD FOR PREPARING A GROUP IVB, VB OR VIB METAL OXIDE ON INORGANIC REFRACTORY OXIDE SUPPORT CATALYST AND THE PRODUCT PREPARED BY SAID METHOD

Dane C. Grenoble, Plainfield; Chang J. Kim, Somerset, and Lawrence L. Murrell, Elizabeth, all of N.J., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 927,829, Jul. 25, 1978, abandoned. This application Oct. 5, 1979, Ser. No. 82,316

Int. Cl.³ B01J *23/20, 23/24*

U.S. Cl. 252—464 **65 Claims**

1. In an acid catalyst preparation method wherein a catalytic component is deposited upon an inorganic refractory metal oxide support which is not itself an acid cracking catalyst so as to result in a supported catalyst which is pretreated prior to use in acid catalyzed hydrocarbon conversion processes, the improvements comprising:

(a) using as the catalytic component a metal oxide selected from the group consisting of the oxides of niobium, tungsten, and mixtures thereof, and tungsten or niobium oxides in combination with one or more additional metal oxides selected from the group consisting of tantalum oxide, hafnium oxide, chromium oxide, titanium oxide and zirconium oxide, and

(b) subjecting the supported catalyst prior to use to a steam atmosphere at a temperature of from 600° to 1200° C.

6. The catalyst preparation method of claim **1** wherein the refractory metal oxide support is alumina.

12. An acid catalyst comprising a catalytic metal oxide component selected from the group consisting of oxides of tungsten, niobium and mixtures thereof, and tungsten or niobium oxides in combination with one or more additional metal oxides selected from the group consisting of tantalum oxide, hafnium oxide, chromium oxide, titanium oxide and zirconium oxide supported on an inorganic refractory metal oxide base which is not itself an acid cracking catalyst prepared by the process of contacting a catalytic metal oxide precursor salt with an inorganic refractory metal oxide base or metal oxide base precursor salt, converting the salt or salts to cataltic metal oxide and refractory metal oxide base respectively and steaming the resulting composite at a temperature of from 600° to 1200° C., the steaming being conducted in a steam atmosphere comprising from 0.1 to 100% steam, the balance being inert gas.

34. The acid catalyst of claim **12** wherein said catalyst contains one or more promoter materials selected from the group consisting of oxides of barium, calcium and magnesium.

4,269,738

ELECTRICALLY CONDUCTING POLYMERS

Guido Pez, Boonton, and Lowell R. Anderson, Morristown, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Nov. 3, 1978, Ser. No. 957,635
Int. Cl.[3] H01B 1/00
U.S. Cl. 252—500 14 Claims

1. A composition comprising a solid polyacetylene having density at least about 0.90 g/cc and having incorporated therein a fluorine-containing peroxide of the group consisting of bisfluorosulfuryl peroxide, bistrifluoromethylsulfuryl peroxide, bistrifluoroacetyl peroxide, bistrifluoromethyl trioxide and bistrifluoromethyl peroxide and their mixtures; wherein the specific direct current conductivity of the composition is greater than that of said polyacetylene alone, as measured by the four-probe method at room temperature; said peroxide being present in an amount of about 0.001 to 40 weight percent of said polyacetylene present.

4,269,739

AGENT FOR SURFACE TREATMENT AND CLEANING OF RECORDS AND SIMILAR OBJECTS

Teddy Grejsner, Taastrup, Denmark, assignor to CBS Records ApS, Vanlose, Denmark

Filed Aug. 3, 1979, Ser. No. 63,399
Claims priority, application Denmark, Aug. 4, 1978, 3461/78
Int. Cl.[3] C11D 3/60
U.S. Cl. 252—547 7 Claims

1. An agent for surface treatment and cleaning of objects, comprising dissolved in a solution or emulsified in an emulsion:

(A) from 0.001 to 1.2% by weight of natural or synthetic wax or wax-like substance,

(B) from 0.001 to 2.5% by weight of fluid silicone oil with lubricating activity,

(C) from 0.001 to 2.5% by weight of surface-active polysiloxane copolymer,

(D) from 0.001 to 1.2% by weight of fluorinated organic surface-active compound, and

(E) from 0.001 to 2.5% by weight of nonionic surfactant wherein the % by weight is based on the total weight of the solution or emulsion.

4,269,740

PROCESS FOR PRODUCING ELASTOMERIC PARTICLES FREE OF AGGLOMERATION

Martin E. Woods, Concord Township, Lake County, and Daniel M. Chang, Avon Lake, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Sep. 28, 1979, Ser. No. 79,752
Int. Cl.[3] C08L 7/00, 9/00, 11/00
U.S. Cl. 260—4 R 15 Claims

1. The process of producing elastomer particles in the form of dry, non-agglomerating powders or crumbs which comprises, forming a dispersion of elastomer particles in an aqueous medium containing from about 15% to about 40% by weight of total solids, adding thereto with agitation an aqueous dispersion of a preplasticized resin latex containing from about 20% to about 60% by weight of total solids, said resin being selected from preplasticized homopolymers and copolymers of vinyl and vinylidene halides, adding to the combined dispersions a coagulating agent in an aqueous medium with agitation whereby said resin is precipitated in the form of a film on said elastomer particles thereby encapsulating said particles with said resin, continuing the agitation for a period of about 15 to about 90 minutes, and then separating the encapsulated particles from the aqueous medium and drying the same, said dried encapsulated particles being such that they do not irreversibly agglomerate upon storage.

4,269,741

OXYGEN-CURABLE MERCAPTOORGANOSILOXANE COMPOSITIONS POSSESSING RAPID SURFACE REACTION AND METHOD OF FORMING HIGHER MOLECULAR WEIGHT PRODUCTS THEREFROM

Gary R. Homan, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Dec. 3, 1979, Ser. No. 99,255
Int. Cl.[3] C08L 91/00
U.S. Cl. 260—18 S 26 Claims

1. A composition of matter, stable in the absence of oxygen, consisting essentially of a product obtained by mixing the following substantially in the absence of oxygen

(A) 100 parts by weight of at least one mercapto-functional organosiloxane, said mercapto-functional organosiloxane having an average of at least two mercapto-functional siloxane units per molecule selected from the group consisting of mercapto-functional siloxane units of the average unit formula

$$(HSC_nH_{2n})_xR_y^4SiO_{\frac{4-x-y}{2}} \text{ and } HSCH(CH_2-CH_2)SiO_{\frac{2-w}{2}}R_w^4,$$

any other siloxane units present having the average unit formula

$$R_z^2SiO_{\frac{4-z}{2}},$$

wherein
each R^2 is R^4 or a 3,3,3-trifluoropropyl radical,
each R^4 is R^3 or OR^1,
each R^3 is an alkyl radical of 1 to 4 inclusive carbon atoms or phenyl radical,
each R^1 is an alkyl radical of 1 to 4 inclusive carbon atoms,
n has a value of from 2 to 4 inclusive,
w has a value of from 0 to 1 inclusive,
x has a value of from 1 to 2 inclusive,
y has a value of from 0 to 2 inclusive,
z has a value of from 0 to 3 inclusive, and the sum of x+y has a value of from 1 to 3 inclusive,
and the ratio of total R^3, HSC_nH_{2n}—,

$$HSCH(CH_2-CH_2)$$

and 3,3,3-trifluoropropyl radicals to silicon atoms in the mercapto-functional organosiloxane is in the range of 0.981/1 to 3.00/1;

(B) 0 to 200 parts by weight of at least one filler;

(C) a catalytic amount of an iron carbonyl catalyst selected from the group consisting of $Fe(CO)_5$, $Fe_2(CO)_9$, $Fe_3(CO)_{12}$, dicyclopentadienyldiiron tetracarbonyl, butadieneiron tricarbonyl, and cyclohexadieneiron tricarbonyl; and

(D) 0.1 to 6 parts by weight of an acid which meets the following criteria: (1) it must be compatible with the mixed composition, (2) it must be a proton donor and (3) the dissociation constant of the acid in an aqueous solution must be greater than 10^{-5}.

2. The composition as claimed in claim 1 wherein the catalytic amount of (C) is in a range of 0.1 to 6 parts by weight of iron carbonyl catalyst per 100 parts by weight of the mercapto-functional organosiloxane.

3. The composition as claimed in claim 2 wherein the iron carbonyl catalyst is $Fe(CO)_5$.

4. The composition as claimed in claim 3 wherein the acid is 2-ethylhexanoic acid.

4,269,742

EPOXY RESIN HARDENING AGENTS FROM MANNICH BASES AND METHOD FOR CURING

Ulrich Goeke, Luenen, and Michael Richter, Unna, both of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 7,834, Jan. 30, 1979, abandoned. This application Dec. 3, 1979, Ser. No. 99,977

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1978, 2805853; May 31, 1978, 2823682

Int. Cl.[3] **C08G** *59/50, 59/54*

U.S. Cl. 260—18 PN **17 Claims**

1. The method of curing an epoxy resin to form a crosslinked duroplast product, which method comprises reacting an epoxy compound having an average of more than one epoxy group per molecule with a liquid amine compound having an average of more than two active amine hydrogen atoms per molecule, which liquid amine compound is prepared by the reaction, with amine exchange and liberation of secondary amine, of a Mannich base and an amount of a member selected from the group consisting of aminoamides, aminoimidazolines, aminoamides containing an imidazoline group, and polyamines such that the amine compound reaction product has an average of more than two active hydrogen atoms per molecule, said Mannich base being prepared by reacting formaldehyde, a monophenol or polyphenol, and a secondary amine.

4,269,743

LOW TOXICITY VINYL HALIDE STABILIZER COMPOSITIONS

Ramchandra K. Hulyalkar, Oakland, and Gerald A. Baum, Paramus, both of N.J., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed Jun. 4, 1979, Ser. No. 45,551

Int. Cl.[3] **C08K** *5/05, 5/09*

U.S. Cl. 260—23 XA **21 Claims**

1. A resin heat stabilizer composition which consists essentially of a metal salt of a higher fatty acid and a polyhydric alcohol selected from the group consisting of tripentaerythritol, mixtures of dipentaerythritol and tripentaerythritol, and mixtures of dipentaerythritol and tripentaerythritol, individually and in combination, with any of pentaerythritol, mannitol, sorbitol and mixtures thereof.

10. A vinyl halide resin composition which comprises a vinyl halide resin and, as stabilizer an effective amount of a composition consisting essentially of a metal salt of a higher fatty acid and a polyhydric alcohol selected from the group consisting of tripentaerythritol, mixtures of dipentaerythritol and tripentaerythritol, and mixtures of dipentaerythritol and tripentaerythritol, individually and in combination, with any of pentaerythritol, mannitol, sorbitol and mixtures thereof.

4,269,744

VINYL HALIDE STABILIZER COMPOSITIONS

Ramchandra K. Hulyalkar, Oakland, and Gerald A. Baum, Paramus, both of N.J., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed Jun. 4, 1979, Ser. No. 45,552

Int. Cl.[3] **C08K** *5/05, 5/09*

U.S. Cl. 260—23 XA **31 Claims**

1. A resin heat stabilizer composition which consists essentially of a metal salt of a higher fatty acid, a polyhydric alcohol selected from the group consisting of dipentaerythritol, tripentaerythritol, mixtures of dipentaerythritol and tripentaerythritol, and mixtures of dipentaerythritol and tripentaerythritol, individually and in combination, with any of pentaerythritol, mannitol, sorbitol and mixtures thereof, and a magnesium compound selected from the group consisting of magnesium oxide, magnesium hydroxide, magnesium acetate, magnesium carbonate, magnesium citrate, magnesium phosphate and mixtures thereof.

14. A vinyl halide resin composition which comprises a vinyl halide resin and, as a stabilizer an effective amount of a composition consisting essentially of a metal salt of a higher fatty acid, a polyhydric alcohol selected from the group consisting of dipentaerythritol, tripentaerythritol, mixtures of dipentaerythritol and tripentaerythritol; and mixtures of dipentaerythritol and tripentaerythritol, individually and in combination, with any of pentaerythritol, mannitol, sorbitol and mixtures thereof and a magnesium compound from the group consisting of magnesium oxide, magnesium hydroxide, magnesium acetate, magnesium carbonate, magnesium citrate, magnesium phosphate and mixtures thereof.

4,269,745

STYRENE SUPPRESSED UNSATURATED POLYESTER RESIN COMPOSITIONS

Dennis J. Neumann, Port Washington, Wis., assignor to Freeman Chemical Corporation, Port Washington, Wis.

Filed Apr. 4, 1980, Ser. No. 137,553

Int. Cl.[3] **C08L** *63/10, 67/06*

U.S. Cl. 260—23 P **1 Claim**

1. A polymerizable resinous composition comprising

1 part by weight unsaturated polyester resin syrup containing

45 to 80 weight percent unsaturated polyester resin;

20 to 55 weight percent copolymerizable monomers, predominantly monomeric styrene;

0.03 to 0.2 percent by weight hydrocarbon wax;

0.5 to 7.0 percent by weight of an unsaturated alkyd resin product of

alpha, beta-ethylenically unsaturated dicarboxylic acid;

glycol; and

linseed oil fatty acids.

4,269,746

COMPOUNDING POLYCHLOROPRENE RUBBER

Ronald J. Tabar, Amherst, Mass., and Paul C. Killgoar, Jr., Livonia, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 1, 1979, Ser. No. 16,658

Int. Cl.[3] **C08C** *19/00;* **C08F** *36/16*

U.S. Cl. 260—23.7 H **4 Claims**

1. A rubber compound for an automotive suspension bushing that resists tear and has compression set below 50% after 22 hours at 150° C., said rubber compound consisting essentially of:

(A) 100 parts by weight mercaptan modified chloroprene rubber;

(B) particulate filler which consists essentially of about 10–200 parts by weight of:

1. high structure, large particle carbon black; and

2. finely divided silica;

(C) sulfur current comprising a sulfur donor;

(D) about 1–30 parts by weight of a low volatility, low viscosity plasticizer that exhibits loss of below about 10% by weight at 150° C. in 24 hours and viscosity below about 500 cP at 22° C.

4,269,747

CROSSLINKABLE ADHESIVE COMPOSITION

Akira Wada, Yokohama, Japan, and Bernard J. Davis, Pass Christian, Miss., assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Apr. 22, 1980, Ser. No. 142,765

Claims priority, application Japan, Apr. 23, 1979, 54-50152

Int. Cl.[3] **C08L** *53/02*

U.S. Cl. 260—27 BB **4 Claims**

1. A crosslinkable adhesive composition comprising

(a) a thermoplastic elastomer of the general formula $(A—B)_n$ or $(A—B)_{n-1}—A$ wherein A represents a block of a monovinyl aromatic hydrocarbon polymer, B represents a block of a conjugated diolefin polymer, and n represents an integer of from 2 to 10,

(b) a non-crosslinkable tackifying resin, and

(c) a crosslinkable tackifying resin, said crosslinkable tackifying resin (c) being an ester of a hydroxyl-containing tackifying resin with acrylic or methacrylic acid.

4,269,748

PROCESS FOR THE PREPARATION OF AQUEOUS POLYURETHANE DISPERSIONS AND SOLUTIONS

Klaus Nachtkamp, Bergisch-Gladbach; Josef Pedain, Cologne, and Jurgen Grammel, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 2, 1979, Ser. No. 17,017

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1978, 2811148

Int. Cl.[3] **C08L** *75/12*

U.S. Cl. 260—29.2 TN **18 Claims**

1. A process for the preparation of aqueous solutions or dispersions of polyurethanes prepared by the reaction of prepolymers which have at least two free isocyanate groups and contain either chemically fixed hydrophilic groups and/or external emulsifiers which are not chemically fixed, with chain lengthening agents in the aqueous phase, characterized in that the isocyanate prepolymer which is hydrophilically modified and/or contains an external emulsifier is mixed with azine chain lengthening agents in the absence of water, and the resulting mixture is then mixed with water before significant increases in viscosity occur.

4,269,749

METHOD OF IMPARTING SALT AND/OR MECHANICAL STABILITY TO AQUEOUS POLYMER MICROSUSPENSIONS

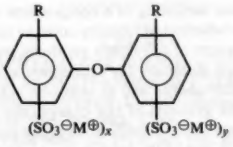
Robert C. Marriott; Frank W. Kristal, and Robert M. Julier, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 30, 1979, Ser. No. 34,786

Int. Cl.[3] **C08L** *33/00*

U.S. Cl. 260—29.6 MQ **13 Claims**

1. In a method of imparting salt and/or mechanical stability to an aqueous polymer microsuspension by admixing with the microsuspension a stabilizing amount of a mono- and dialkyldiphenyl ether sulfonate surfactant composition, the improvement wherein at least about 35 weight percent of the composition is at least one dialkyldiphenyl ether sulfonate of the formula



(I)

wherein:

each R is an alkyl radical and each R can be the same or different,

each $M^{\oplus}$ is a hydrogen, alkali metal ion, alkaline earth metal ion or ammonium ion and each $M^{\oplus}$ can be the same or different, and

x and y are individually 0 or 1 with the proviso that x or y is 1 and the average value of $\Sigma(x+y)$ for all (I) is at least about 1.7.

4,269,750

PROCESS FOR THE PREPARATION OF POLYMERS CONTAINING HYDANTOIN GROUPS

Jürgen Lewalter; Ludwig Rottmaier, both of Odenthal; Rudolf Merten, Leverkusen; Wilfried Zecher, Leverkusen; Willi Dünwald, Leverkusen, and Bernhard Schulte, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 5, 1979, Ser. No. 100,419

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854442

Int. Cl.[3] **C08G** *18/00*

U.S. Cl. 260—30.2 **11 Claims**

1. A process for the production of compounds containing (thio)hydantoin groups comprising reacting a glycine ester with a polyiso(thio)cyanate or iso(thio)cyanurate polyisocyanate at a temperature of from −10° to 500° C. in the presence of an acid having at least one free carboxylic acid group in a solventless system or in the presence of non-phenolic solvent.

4,269,751

KNEADABLE MASTIC COMPOSITION COMPRISED OF EPOXY RESIN AND AROMATIC DIAMINE CURING AGENT

Francis G. Firth, Los Angeles, Calif., assignor to Applied Plastics Co., Inc., El Segundo, Calif.

Filed Mar. 9, 1979, Ser. No. 19,266

Int. Cl.[3] **C08L** *63/00;* **C09J** *3/16;* **C08K** *5/13, 5/10*

U.S. Cl. 260—31.2 R **17 Claims**

1. A non-toxic, kneadable two component epoxy mastic composition consisting essentially of a first component epoxy resin and a curing means therefor as a second component, said components sharing the same environment being in close side by side relationship confined in a closed container and packaged upon or between film and after mixing being capable of curing to a solid state in a short time at ambient temperature without the application of external heat when mixed in the correct proportions, said second component consisting essentially of an aromatic diamine dissolved in a compatible aromatic solvent, said composition further characterized by the presence of a catalyst selected from the group consisting of 2-hydroxy benzoic acid and benzoic acid, and having a stable unlimited shelf life.

4,269,752

POLYESTER IMIDE WIRE ENAMELS

Otto S. Zamek, Schenectady; Denis R. Pauze, Scotia, both of N.Y., and Richard J. Jablonski, Coshoston, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed May 18, 1979, Ser. No. 40,218

Int. Cl.[3] **C08K** *5/06, 5/10*

U.S. Cl. 260—31.4 R **6 Claims**

1. An electrical wire enamel comprising:

(a) a polyester imide obtained by heating ingredients consisting essentially of

(i) an aromatic diamine;

(ii) an aromatic carboxylic anhydride containing at least one additional carboxylic group;

(iii) terephthalic acid or a di(C_1–C_6) alkyl ester, amide or acyl halide thereof;

(iv) a polyhydric alcohol having at least three hydroxyl groups;

(v) an alkylene glycol; and

(vi) an effective amount of 1-phenoxy-2-propanol to reduce molecular weight abatement until reaction therebetween is substantially complete; and

(b) a solvent therein comprising predominantly

(i) an alkylene glycol monoether or monoester,

(ii) a polyalkylene glycol monoether or monoester or

(iii) a mixture of (i) and (ii).

4,269,753

SILOXANE COMPOSITIONS WHICH CAN BE CERAMIFIED AT HIGH TEMPERATURES

Katsutoshi Mine; Tsuneo Maruyama, both of Ichihara, and Kazuhide Takeshita, Tokyo, all of Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Jan. 28, 1980, Ser. No. 115,983
Claims priority, application Japan, Mar. 7, 1979, 54/25646
Int. Cl.[3] C08K *5/05*
U.S. Cl. 260—33.4 SB 7 Claims

1. A composition of matter consisting essentially of

(A) 100 parts by weight of a siloxane copolymer consisting essentially of $R_3SiO_{\frac{1}{2}}$ units and $SiO_{4/2}$ units wherein R is a monovalent organic radical having 1–10 carbon atoms and containing at least two unsaturated groups and at least two alkoxy groups bound to silicon atoms per molecule,

(B) 0–600 parts by weight of a linear or branched organopolysiloxane polymer having at least two unsaturated groups bound to silicon atoms per molecule,

(C) an organopolysiloxane having at least two hydrogen atoms bonded to silicon atoms per molecule,

(D) 3–300 parts by weight of a ceramic forming filler substance and,

(E) a catalytic amount of an addition reaction catalyst wherein in the components (A), (B) and (C) the mole ratio of hydrogen atoms bound to silicon atoms to unsaturated groups bound to silicon is from 0.5/1 to 10/1 and the total number of unsaturated groups in component (A) and component (B) and the total numer of hydrogen atoms bonded to silicon atoms in component (C) is at least five.

4,269,754

PHENOLIC RESIN PARTICLES AND PROCESSES FOR THEIR PRODUCTION AND FRICTION ELEMENTS CONTAINING SAME

Edward J. Lang, Grand Island, and Michael G. Dubenitz, Williamsville, both of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Jul. 19, 1979, Ser. No. 58,899
Int. Cl.[3] C08K *5/01*
U.S. Cl. 260—33.6 R 19 Claims

1. A process for producing a friction particle comprising dispersing a liquid, heat curable phenolic resin in a paraffinic oil having a viscosity of at least about 1,000 SUS at 100° F. at a temperature of about 100° to about 175° C.

4,269,755

COMPOSITION COMPRISING AROMATIC POLYCARBONATE AND PASSIVATED WOLLASTONITE FILLER PARTICLES

Fred F. Holub, Schenectady, N.Y., and Gerald F. Macke, Mount Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 20, 1979, Ser. No. 105,724
Int. Cl.[3] C08L *69/00*
U.S. Cl. 260—37 PC 10 Claims

1. A composition comprising an aromatic polycarbonate resin and an effective, modulus- and surface-improving amount of wollastonite filler particles carrying in combined state a small but effective amount, in the range of 0.01% to 10%, of the weight of said particles, of an aryl epoxy compound as agent improving the affinity of said particles for said aromatic polycarbonate.

4,269,756

USE OF ORGANOTITANATE IN THE ENCAPSULATION OF ELECTRICAL COMPONENTS

Tsung-Yuan Su, Greenville, S.C., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 27, 1979, Ser. No. 107,536
Int. Cl.[3] C08L *81/04*
U.S. Cl. 260—37 R 3 Claims

1. A method of making a material for use in the encapsulation of electrical components by making a blend consisting essentially of poly(phenylene sulfide), about 30 to 70% by weight of inorganic filler and organotitanate in an amount of from about 0.5 to 5% by weight of the inorganic filler in the blend.

4,269,757

SILOXANE COMPOSITIONS WHICH FORM CERAMICS AT HIGH TEMPERATURES

Katsutoshi Mine; Tsuneo Maruyama, both of Ichihara, and Kazuhide Takeshita, Tokyo, all of Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Jan. 18, 1980, Ser. No. 113,170
Claims priority, application Japan, Mar. 13, 1979, 54-28621
Int. Cl.[3] C08L *83/04*
U.S. Cl. 260—37 SB 8 Claims

1. A composition of matter consisting essentially of

(A) 100 parts by weight of a siloxane copolymer consisting essentially of $R_3SiO_{\frac{1}{2}}$ units and $SiO_{4/2}$ units wherein R is a substituted or unsubstituted monovalent hydrocarbon radical containing 1–10 carbon atoms;

(B) 0–600 parts by weight of an organopolysiloxane polymer having the average unit formula

$$R_aSiO_{(4-a)/2}$$

and containing no $SiO_{4/2}$ units wherein R has the same meaning as in (A) above and a has an average value of 1–3;

(C) 3–500 parts by weight of a ceramic-forming filler and,

(D) 0.1–10 parts by weight of an organic peroxide.

4,269,758

METHOD FOR HARDENING A COMPOSITION PARTICULARLY INTENDED FOR MAKING FOUNDRY CORES AND MOULDS

Gerard Y. Richard, Precy-sur-Oise, France, assignor to Societe D'Applications de Procedes Industriels et Chimiques S.A.P.I.C., Ansieres, France

Filed Mar. 12, 1979, Ser. No. 19,511
Claims priority, application France, Mar. 14, 1978, 78 07331
Int. Cl.[3] C08L *61/06*
U.S. Cl. 260—38 13 Claims

1. Process for the hardening of a composition intended particularly for the production of foundry cores or moulds as well as for the manufacture of refractory products, abrasive products or construction materials, the said composition including at least one granular charge and at least one acid hardenable resin to cohere the granules of the charge, the said process including the known steps of gasification of the composition by sulfurous anhydride and of the introduction into the composition before or at the same time as the said gasification of an oxidizing agent for the sulfurous anhydride characterised in that the sulfurous anhydride is blown in in dilution in another gas of lower diffusibility in the ratio of one part of sulfurous anhydride for two to twenty parts of the other gas, the temperature of the resultant gas mixture being below the critical temperature of sulfurous anhydride and the gas mixtures being introduced under superatmospheric pressure into the composition to be hardened.

4,269,759

3,3'-TETRAGLYCIDYLSULFONYLDIANILINE THERMOSETTING COMPOSITIONS AND POLYBUTADIENE RUBBER MODIFIED THERMOSETTING COMPOSITIONS PREPARED FROM THE SAME

Robert Edelman, Richmond, N.Y., assignor to Celanese Corporation, New York, N.Y.

Filed Aug. 1, 1979, Ser. No. 62,873
Int. Cl.[3] C08L *63/00*; C08K *7/06*
U.S. Cl. 260—42.17 **8 Claims**

1. A thermosetting composition which when cured has improved resistance to moisture and improved resistance against reductions in the glass transition temperature when subjected to temperatures of about 140° to about 180° F. at a relative humidity of from about 50 to about 100% comprising (a) 3,3'-tetraglydidylsulfonyldianiline; (b) an effective amount of a curing agent selected from at least one member of the group consisting of 4,4'-diaminodiphenylsulfone and 3,3'-diaminodiphenylsulfone; (c) a carboxyl terminated polybutadiene rubber comprising from about 80 to about 100%, by weight, 1,2-polybutadiene and from about 20 to about 0%, by weight, 1,4-polybutadiene, wherein said polybutadiene rubber is present in said composition in an amount of from about 30 to about 40%, by weight based on the weight of (a) and rubber; (d) an effective amount of a chromium octoate esterification catalyst; and (e) an effective amount of at least one free radical initiator having a decomposition half life at 350° F. of not greater than about 2 minutes.

4,269,760

FINE SPHERICAL POLYMER PARTICLES CONTAINING INORGANIC PIGMENT AND/OR COLORING AGENT AND PROCESS FOR THE PREPARATION THEREOF

Saburo Wakimoto, Hayama; Sadayasu Miyahara, Fujisawa, and Yoshihiko Hyosu, Sagamihara, all of Japan, assignors to Sinloihi Company Limited, Osaki, Japan

Filed Jul. 13, 1979, Ser. No. 57,344
Claims priority, application Japan, Nov. 9, 1978, 53-137337; Nov. 9, 1978, 53-137338
Int. Cl.[3] C08J *3/20*
U.S. Cl. 260—42.53 **22 Claims**

1. Fine spherical polymer particles with a uniform particle size distribution containing at least one member selected from the group of inorganic pigments and black coloring agents, which comprise polymerized products from polymerizable monomers and an inorganic dispersion stabilizer in which said polymerizable monomers are charged with cation or anion and said inorganic dispersion stabilizer has an opposite charge to said monomers, the surface of said polymer particles being firmly bound through ionic bond to and being completely covered with said inorganic dispersion stabilizer.

4,269,761

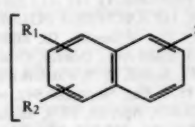
ALKYLNAPHTHALENE SULFONIC ACID SALTS AS FILLER DEACTIVATORS IN POLYOLEFINS

Richard A. Suhoza, Norwalk, Conn., assignor to R. T. Vanderbilt Company, Inc., Norwalk, Conn.

Filed Mar. 12, 1979, Ser. No. 20,106
Int. Cl.[3] C08K *5/42*
U.S. Cl. 260—45.7 S **6 Claims**

1. An improved stabilized polyolefin composition containing an inorganic or mineral filler and antioxidants wherein the improvement comprises:

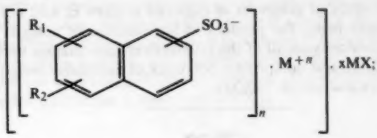
about 0.5 to 15 parts and preferably 0.8 to 2.5 parts based on hundred parts polymer of a filler deactivator selected from a group consisting of normal salts of alkylnaphthalenesulfonic acid of the formula



(I)

. M^{+n};

overbased salts of the formula



(II)

. xMX;

and mixtures thereof wherein

R_1 = nonyl, dodecyl;

R_2 = H, nonyl, dodecyl;

M = ammonium radical, Group IA and Group IIA metals;

n = 1-2;

x > 1

X = anion of a base, anion of a weak acid

4,269,762

POLYCARBONATE CONTAINING A SALT OF A TETRAHYDROCARBYL BORATE AS AN IGNITION DEPRESSANT

Lowell S. Thomas, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 21, 1980, Ser. No. 142,328
Int. Cl.[3] C07F *5/02*; C08K *5/50, 5/55*
U.S. Cl. 260—45.7 P **6 Claims**

1. A composition comprising a carbonate polymer having dispersed therein a thermally stable salt of a tetrahydrocarbyl borate in an amount sufficient to retard combustion when the composition is exposed to a low temperature ignition source.

4,269,763

METHOD FOR THE PRODUCTION OF LOW MELTING RING ALKYLATED DIPHENYL-PARA-PHENYLENEDIAMINES

Donald E. Miller, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 21, 1980, Ser. No. 132,598
Int. Cl.[3] C08K *5/18*
U.S. Cl. 260—45.9 QB **4 Claims**

1. An oxidizable diene rubber having incorporated therein an antioxidant/antiozonant in the amount of from 0.25 to 8.0 percent by weight based on the weight of the rubber of a mixture of ring alkylated diphenyl-p-phenylenediamine prepared by reacting in the presence of a condensation catalyst at temperatures from 175°325° C., said reaction involving the continuous removal of water as it is formed, (a) hydroquinone, and (b) 2.0 to 2.5 moles of an amine mixture per mole of (a): the improvement comprising an amine mixture of o-toluidine, mixed xylidines and aniline where all the amine mixture ratios are defined by the equation:

$$\text{melting point} = 64.85 + 0.1496x + 0.013.07y - 0.001245x^2 + 0.011403y^2 - 0.022xy;$$

wherein the melting point is 60° C. or less and x is the mole percent mixed xylidines, $[(y/100)(100-x)]$ is the mole percent o-toluidine and $\{100-[x+y(100-x]\}$ is the mole percent aniline, and wherein the mole percent of mixed xylidines is less than 50.

4,269,764

PREPARATION FOR TREATMENT OF ALLERGIC PATIENTS SENSITIVE TO RAGWEED POLLEN

Roy Patterson, 3109 Country La., Wilmette, Ill. 60091, and Floyd C. McIntire, 7780 E. Cornell Ave., Denver, Colo. 80231

Continuation of Ser. No. 63,152, Aug. 2, 1979, which is a division of Ser. No. 879,966, Feb. 21, 1978, Pat. No. 4,180,562, which is a continuation of Ser. No. 788,049, Apr. 15, 1979, abandoned, which is a continuation of Ser. No. 358,223, May 8, 1973, abandoned. This application Jun. 27, 1980, Ser. No. 163,719

Int. Cl.[3] **A61K** *39/36*

U.S. Cl. 260—112 R **2 Claims**

1. A mixture of polymers of ragweed antigen E, said polymer mixture being the product of the reaction of antigen E with glutaraldehyde, all of the polymers of said mixture being water soluble and comprising polymers of molecular weights both above and below 200,000.

4,269,765

IMMUNE SERUM FOR DIAGNOSIS OF CANCER AND PREPARATION THEREOF

Yoshiji Matsuda; Keiji Tamura, both of Sendai; Hiroaki Motoki, Koganei; Fumio Kitame, and Nakao Ishida, both of Sendai, all of Japan, assignors to Kabushiki Kaisha Saikin Kagaku Kenkyujo, Miyagi and Kabushiki Kaisha Kayaku Kosei Bushitsu Kenkyujo, Tokyo, both of, Japan

Filed Mar. 30, 1978, Ser. No. 891,645

Claims priority, application Japan, Jun. 16, 1977, 52-71349

Int. Cl.[3] **A61K** *39/00, 39/44;* **C07G** *7/00;* **G01N** *33/54*

U.S. Cl. 260—112 B **4 Claims**

1. A specific diagnostic immune serum for cancer diagnosis prepared by immunizing a non-human animal with an acid protein composition having immunosuppressive properties (IAP) having an isoelectric point pH of 2.9 to 3.3 determined by thin layer gel electrofocusing and a molecular weight of about 59,000 determined by electrophoresis with 2.5% polyacrylamide gel containing sodium dodecyl sulfate, said acid protein compositions being a white powder exhibiting the following properties:

decomposition point 265° C.

soluble in water and in 0.01 M phosphate buffered saline

insoluble in methanol, ethanol, butanol, acetone, ethylacetate and chloroform

positive color reaction with von Euler's reagent, Ehrlich's reagent, Buret's reagent and Molisch's reagent

negative color reaction with ferric chloride reagent and Lieberman's reagent

positive reaction to ninhydrin after hydrolysis in 6 N hydrolchloric acid at 120° C. for 15 hours

infrared absorption spectrum with 0.5% K Br showing maxima at 3300 cm^{-1}, 2940 cm^{-1}, 2340 cm^{-1}, 1650 cm^{-1}, 1540 cm^{-1}, 1440 cm^{-1}, 1400 cm^{-1}, 1240 cm^{-1}, 1060 cm^{-1},

ultra-violet absorption spectrum of an 0.02% solution in distilled water $\lambda max = 280$ nm and which is obtainable by negative ion-exchange chromatography from a human body liquid selected from the group consisting of serum, peritoneal fluid, thoracic fluid, urine and other body liquids of humans suffering from cancer and the liquid extracted from placentas of healthy humans.

2. A method for preparing a specific diagnostic immune serum for cancer diagnosis which comprises the steps of:

(a) preparing a solution in an aqueous injectable medium of an acid protein composition having immunosuppressive properties (IAP) having an isoelectric point pH of 2.9 to 3.3 determined by thin layer gel electrofocusing and a molecular weight of about 59,000 determined by electrophoresis with 7.5% polyacrylamide gel containing sodium dodecyl sulfate, said acid protein composition being a white powder exhibiting the following properties:

decomposition point 265° C.

soluble in water and in 0.01 M phosphate buffered saline

insoluble in methanol, ethanol, butanol, acetone, ethylacetate and chloroform

positive color reaction with von Euler's reagent, Ehrlich's reagent, Buret's reagent and Molisch's reagent

negative color reaction with ferric chloride reagent and Lieberman's reagent

positive reaction to ninhydrin after hydrolysis natant IAP antibody-containing liquid phase; and

(i) separating the supernatant IAP anti-body-containing liquid from the sediment.

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METHOD AND AI ᵖARATUS FOR FRACTIONATING THE WHOLE WHEAT KERNEL BY SEQUENTIAL MILLING

Ganta V. Rao, Louisville, Ky., and Floyd K. Shoup, Hutchinson, Kans., assignors to Far-Mar-Co., Inc., Hutchinson, Kans.

Continuation-in-part of Ser. No. 910,633, May 30, 1978, Pat. No. 4,201,708, which is a continuation of Ser. No. 831,905, Sep. 9, 1977, abandoned. This application Feb. 20, 1980, Ser. No. 109,216

The portion of the term of this patent subsequent to May 6, 1997, has been disclaimed.

Int. Cl.[3] **A23J** *1/12*

U.S. Cl. 260—112 G **19 Claims**

1. A process for fractionating the whole wheat kernel into its gluten and non-gluten endosperm components comprising the steps of:

a. tempering whole wheat kernels in water to a moisture content, by weight, in the range from 14% to saturation;

b. flaking the whole sheat kernels to a flake thickness in the range from 0.0005 to 0.025 inches;

c. milling the flakes into primarily bran-germ and endosperm particles, and bran-germ particles being larger than said endosperm particles, and said bran-germ and endosperm particles having a size distribution such that 20 to 90% by weight of the particles are retained on a 30 mesh U.S. Standard screen;

d. hydrating said particles in an additional quantity of water ranging from 65 to 85% by weight of said particles to be hydrated and in an amount just sufficient to achieve a saturation moisture content and agitating the particles and water to form a thick, dough-like mass;

e. water washing a major proportion of said non-gluten endosperm components from said dough-like mass to leave a primarily gluten-containing agglomerate; and

f. separating and recovering vital wheat gluten from said agglomerate.

4,269,767

DIAZOTIZATION OF AROMATIC AMINES

Serge Ratton, La Verpilliere, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Mar. 6, 1979, Ser. No. 18,024

Claims priority, application France, Mar. 6, 1978, 78 06905

Int. Cl.[3] **C07C** *113/00*

U.S. Cl. 260—141 **15 Claims**

1. A process for the preparation of an aqueous solution of an aryldiazonium salt, comprising diazotizing an aqueous solution of an aromatic amine salt with a nitrogenous vaporous admixture which comprises nitric oxide and nitrogen peroxide, the molar ratio of NO/NO_2 in said admixture being at least 2.

4,269,768
PROCESS FOR THE PREPARATION OF CHLOROZINCATE SALTS OF THIAZOLIUM AZO DYESTUFFS

Rudolf Neeb, Obertshausen; Kurt Hohmann, Neu-Isenburg, and Reinhard Mohr, Offenbach am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 6, 1979, Ser. No. 54,993

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1978, 2840121

Int. Cl.[3] C09B *45/00*

U.S. Cl. 260—146 R 5 Claims

1. In a process for the manufacture of a chlorozincate salt of a thiazolium azo dyestuff which comprises treating a thiazole azo compound with a dialkylsulfate having from 1 to 4 carbon atoms in each alkyl moiety in an aqueous medium at a temperature of approximately from 10° to 50° C. and at a pH between 7 and 3 in the presence of an acid-binding zinc compound, and subsequently precipitating the alkylated product as chlorozincate salt, the improvement consisting of: (1) carrying out the alkylation with the use of from 1.8 to 2.5 mols of the dialkylsulfate, calculated on the thiazole azo compound and (2) precipitating the thiazolium azo dyestuff formed from the reaction solution as the chlorozincate salt by adding an alkali metal chloride.

4,269,769
DIAZO COMPOUNDS OBTAINED BY COUPLING ACETOACETANILIDES WITH TETRAZOTIZED DIAMINOBENZANILIDES

Ugo Moiso; Vincenzo Massabo, and Danilo Domenis, all of Saronno, Italy, assignors to Aziende Colori Nazionali Affini ACNA S.p.A., Saronno, Italy

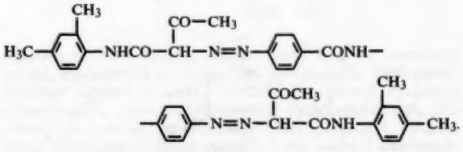
Continuation of Ser. No. 274,620, Jul. 24, 1972, abandoned. This application Apr. 27, 1979, Ser. No. 34,000

Claims priority, application Italy, Jul. 26, 1971, 7669 A/71; Dec. 29, 1971, 33062 A/71

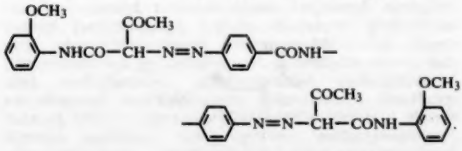
Int. Cl.[3] C09B *35/30, 35/32;* C09D *11/02, 17/00*

U.S. Cl. 260—176 2 Claims

1. A diazo pigment of the formula:



2. A diazo pigment of the formula:



4,269,770
PROCESS FOR THE PREPARATION OF CYANOAZO DYESTUFFS

Rainer Hamprecht, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 1, 1979, Ser. No. 80,842

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1978, 2846438

Int. Cl.[3] C07C *107/00;* C09B *43/00*

U.S. Cl. 260—208 8 Claims

1. Process for the preparation of azo compounds, which carry in the diazo component at least one cyano group in the ortho-position relative to the azo bridge, by reacting corresponding ortho-halogenoazo dyestuffs with metal cyanides in an aqueous medium, characterised in that the reaction is carried out with copper-cyano complexes without the addition of water-immiscible solvents and/or catalysts.

4,269,771
TOTAL SYNTHESIS OF 7-OXO-4-THIA-1-AZABICYCLO-[3,2,0]-HEPTANE-2-CARBOXYL DERIVATIVES USEFUL AS β-LACTAMASE INHIBITORS AND ANTIBACTERIAL AGENTS

Paolo Lombardi; Giovanni Franceschi, and Federico Arcamone, all of Milan, Italy, assignors to Farmitalia Carlo Erba, Milan, Italy

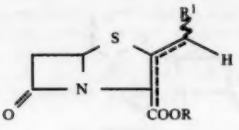
Filed Nov. 13, 1979, Ser. No. 93,603

Claims priority, application United Kingdom, Apr. 6, 1979, 12168/79

Int. Cl.[3] C07D *499/00*

U.S. Cl. 260—245.2 R 2 Claims

1. A process for the preparation of compounds of formula I:

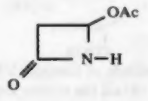


I

wherein R is hydrogen, lower alkyl, trichloroethyl, benzyl, p-nitrobenzyl, acetoxymethyl, pivaloyloxymethyl, phthalidyl, or a —CH(CH$_3$) OCOOEt group;

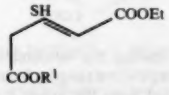
R^1 is —CH_2OH, —CHO, —CH_3SH, —CH_2NH_2, —CH_2OCOR^2, —$COOR^2$, —CH_2NHCOR^2, or —CH_2OR^3, where R^2 is a lower alkyl, and R^3 is a lower alkyl, benzyl, or trityl,

which comprises reacting a 4-acetoxy azitidinone of formula II:



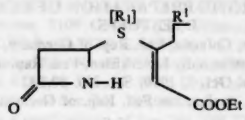
II

dissolved in a solvent selected from the group consisting of acetone, tetrahydrofuran, dimethylformamide, water, and mixtures thereof, at room temperature and in the presence of a base selected from the group consisting of $NaHCO_3$, KOH, K_2CO_3, and Et_3N, with a β-thioketoester of formula:



where R^1 has the meanings given above, to obtain a mixture of diastereoisomeric products of formula III;

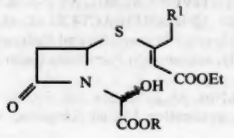
III



where R^1 is as above defined, which mixture is successively condensed, dissolved in anhydrous acetone and in the presence of a base selected from the group consisting of pyridine and triethylamine, at room temperature, with a glyoxylic ester of formula:

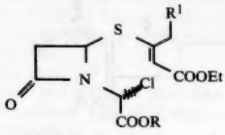
where R has the meanings given above, to give a mixture of diastereoisomeric substituted carbinols of formula IV:

IV



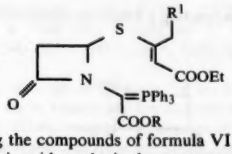
where R and R^1 are as above defined, reacting that mixture with thionyl chloride, at a temperature ranging from −78° C. to 0° C. and in the presence of pyridine, to afford the corresponding chlorides of formula V:

V



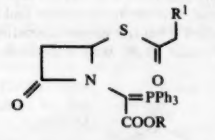
which are transformed by means of triphenylphosphine and a base selected from the group consisting of pyridine and 2,6-lutidine, at a temperature of 25°–50° C., into their respective phosphorous ylids of formula VI:

VI



ozonolysing the compounds of formula VI in the presence of trifluoroacetic acid, to obtain the corresponding phosphoranes of formula VII:

VII



and successively heating the so-obtained phosphoranes of formula VII at a temperature ranging from 30° to 140° C., in an inert solvent selected from the group consisting of benzene, toluene, and xylene, to obtain the desired compounds of formula I.

4,269,772

SYNTHESIS OF THIENAMYCIN VIA TRANS-3-CARBOXYMETHYLENE-4-CARBOXY-5-METHYL-Δ^2-ISOXAZOLINE

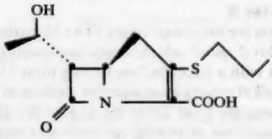
David G. Melillo, Scotch Plains, and Kenneth M. Ryan, Clark, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 14, 1980, Ser. No. 112,057

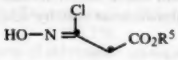
Int. Cl.[3] **G07D** *487/04*

U.S. Cl. 260—245.2 T **1 Claim**

1. A process for preparing:



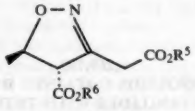
and its pharmaceutically acceptable salts which comprise the cycloaddition of:



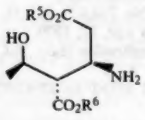
with

$CH_3CH{=}CHCOOR^6$

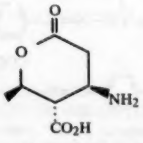
to form:



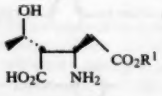
followed by reduction to yield:



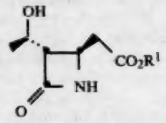
followed by cyclization and deblocking to yield:



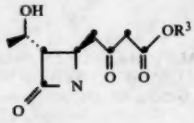
followed by alcoholysis with R^1OH to form:



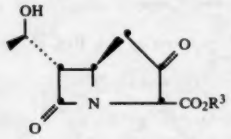
followed by cyclizing to form:



followed by carboxyl-deprotecting, activating and treating with $(R^3O_2CCH_2CO_2)_2Mg$ to form:



followed by deprotecting, diazotizing, and cyclizing to form:



followed by activating, treating with $HSCH_2CH_2NHR^4$ and deprotecting wherein R^1, R^3, R^4, R^5 and R^6 are removable protecting groups.

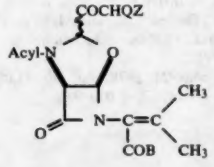
4,269,773

FUSED OXAZOLIDINE COMPOUNDS

Yoshioka Mitsuru, Toyonaka; Tsuji Teruji, Takatsuki; Nishitani Yasuhiro, Izumi, and Nagata Wataru, Nishinomiya, all of Japan, assignors to Shionogi & Co., Ltd., Japan

Division of Ser. No. 790,618, Apr. 25, 1977, Pat. No. 4,159,984. This application Mar. 29, 1979, Ser. No. 25,065
Claims priority, application Japan, Apr. 27, 1976, 51-49274
Int. Cl.³ C07D *498/06*
U.S. Cl. 260—245.4 **11 Claims**

1. A compound of the following formula:



wherein Acyl is a member selected from the group consisting acetyl, cyclopentylcarbonyl, cyclopentylacetyl, cyclohexylcarbonyl, cyclohexylacetyl, cyclohexylpropionyl, cyclohexadienylacetyl, cycloheptylcarbonyl, cycloheptylacetyl, cycloheptylpropionyl, chloroacetyl, chloropropionyl, fluoroacetyl, bromoacetyl, difluoroacetyl, dichloroacetyl, chloropropionyl, hexenoyl, methoxyacetyl, isopropoxyacetyl, pentyloxyacetyl, hexyloxyacetyl, cyclohexyloxyacetyl, phenoxyacetyl, phenoxypropionyl, phenoxybutyryl, diphenoxyacetyl, methylthiophenoxyacetyl, tetrahydronaphthyloxyacetyl, methylthioacetyl, butylthioacetyl, cyclohexylthioacetyl, phenylthioacetyl, phenylthiopropionyl, fluorophenylthioacetyl, chlorophenylthioacetyl, pyridylthioacetyl, pyrimidylthioacetyl, benzoyl, methylbenzoyl, dimethylbenzoyl, carboxybenzoyl, aminobenzoyl, methoxybenzoyl, chlorobenzoyl, dimethoxybenzoyl, trimethoxybenzoyl, methylenedioxybenzoyl, phenylbenzoyl, naphthoyl, methylnaphthoyl, methoxynaphthoyl, ethoxynaphthoyl, tetrahydronaphthoyl, acetylnaphthoyl, phenylacetyl, phenylpropionyl, phenylbutyryl, hydroxyphenylacetyl, methoxyphenylacetyl, acetyloxyphenylacetyl, aminophenylacetyl, fluorophenylacetyl, chlorophenylacetyl, bromophenylacetyl, methylthiophenylacetyl, methylphenylacetyl, dimethylphenylacetyl, naphthylacetyl, thienylacetyl, tetrazolylacetyl, methoxycarbonyl, ethoxycarbonyl, t-butoxycarbonyl, cyclohexyloxycarbonyl, chloroethoxycarbonyl, trichloroethoxycarbonyl, tribromoethoxycarbonyl, bromoethoxycarbonyl, iodoethoxycarbonyl, cyclopropylmethoxycarbonyl, cyclopropylethoxycarbonyl, cyclopentyloxycarbonyl, cyclohexyloxycarbonyl, cycloheptyloxycarbonyl, cyclohexadienyloxycarbonyl, isobornyloxycarbonyl, methanesulfonylethoxycarbonyl, ethanesulfonylpropoxycarbonyl, phenoxycarbonyl, methylphenoxycarbonyl, dimethylphenoxycarbonyl, diphenylmethoxycarbonyl, naphthyloxycarbonyl, benzyloxycarbonyl, bromobenzyloxycarbonyl, chlorobenzyloxycarbonyl, nitrobenzyloxycarbonyl, dimethylbenzyloxycarbonyl, methylenedioxybenzyloxycarbonyl, methanesulfonyl, ethanesulfonyl, benzenesulfonyl, methylbenzenesulfonyl, and benzylsulfonyl; COB is lower alkoxycarbonyl or aralkoxycarbonyl; Q is hydrogen, C_1 to C_5 alkyl, phenyl, tolyl, methoxylphenyl, chlorophenyl or isopropylphenyl; and Z is a hydrogen or a nucleophilic group selected from the group consisting of halogen, alkoxy, aralkoxy, aryloxy, hydroxy, alkylthio, aralkylthio, arylthio, mercapto, sulfo, alkylsulfonyl, amino, acetoxy, propionyloxy, butyryloxy, isobutyryloxy, pivaloyloxy, cyclobutylcarboxy, carbamoyloxy, methylcarbamoyloxy, ethylcarbamoyloxy, chloroethylcarbamoyloxy, trichloroethyoxycarbamoyloxy, dimethylcarbamoyloxy, di-(methoxybenzyl)-carbamoyloxy, phenylcarbamoloxy, anisylcarbamoyloxy, sulfophenylcarbamoyloxy, carboxymethylphenylcarbamoyloxy, methanesulfonyloxy, sulfonyloxy, thiopropionylthio, propylthiocarbonylthio, cyclopentyloxythiocarbonylthio, thiocarbamoylthio, dimethylthiocarbamoylthio, tosylthio, furylcarbonylthio, methylamino, ethylamino, diethylamino, chloroethylamino, anilino, tolylamino, methylnitrophenylamino, naphthylamino, methylpyrrolyl, pyridazinyl, and triazinyl, said nucleophilic groups which contain carbon atoms containing up to 10 carbon atoms.

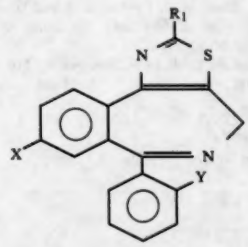
4,269,774

THIAZOLO[5,4-D][2]BENZAZEPINES

Rodney I. Fryer, North Caldwell, and Norman W. Gilman, Wayne, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

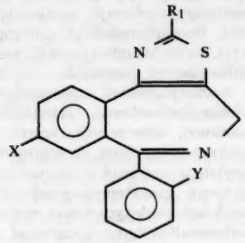
Filed Jun. 23, 1980, Ser. No. 161,713
Int. Cl.³ A61K *31/55*; C07D *513/04*
U.S. Cl. 260—245.5 **4 Claims**

1. A compound of the formula



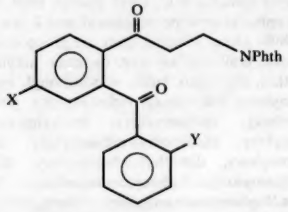
wherein X and Y are hydrogen or halogen and R_1 is lower alkyl or NR_2R_3
wherein R_2 and R_3 are hydrogen or lower alkyl
and the pharmaceutically acceptable salts thereof.

4. A process to produce a compound of the formula



wherein X and Y are hydrogen or halogen and R_1 is lower alkyl or NR_2R_3
wherein R_2 and R_3 are hydrogen or lower alkyl
which comprises

(A) reacting a compound of the formula



wherein X and Y are as above and Phth is phthaloyl with a brominating agent,

(B) reacting the product of (A) with a substituted thioamide of the formula

wherein R_1 is as above,

(C) reacting the product of (B) with an aqueous solution of a lower alkyl amine and thereafter isolating the end product.

4,269,775

OXIME DERIVATIVES FOR PROTECTING PLANT CROPS

Henry Szczepanski, Rheinfelden; Henry Martin, Allschwil; Werner Föry, Basel, all of Switzerland, and Georg Pissiotas, Lörrach, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

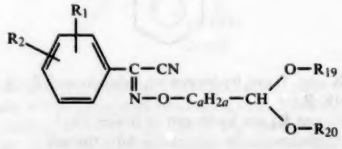
Filed Aug. 24, 1979, Ser. No. 69,414

Claims priority, application Switzerland, Sep. 1, 1978, 9252/78

Int. Cl.[3] **C07D** *317/30, 319/06;* **C07C** *131/00*

U.S. Cl. 260—340.7 **17 Claims**

1. A compound of the formula



wherein

R_1 is hydrogen, methyl, methoxy, chlorine, cyano or trifluoromethyl,

R_2 is hydrogen or chlorine, or

R_1 and R_2 taken together is —CH=CH—CH=CH— attached to adjacent carbon atoms in the ring,

a is 1 or 2, and

R_{19} and R_{20} are each methyl or ethyl, or

R_{19} and R_{20} taken together is C_2–C_7 alkylene having 2 or 3 carbon atoms in its principal chain.

4,269,776

JET PUMP EXHAUST RECYCLE IN PRODUCTION OF PHTHALIC ANHYDRIDE

Gerhard Keunecke, Geyen, and Herbert Krimphove, Pulheim, both of Fed. Rep. of Germany, assignors to Davy Powergas GmbH, Cologne, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 49,836, Jun. 18, 1979, abandoned, and a continuation-in-part of Ser. No. 110,571, Jan. 9, 1980, abandoned. This application Jan. 30, 1980, Ser. No. 117,143

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1978, 2826346

Int. Cl.[3] **C07D** *307/89*

U.S. Cl. 260—346.4 **10 Claims**

1. In a process for the production of phthalic anhydride comprising a stage of catalytic oxidation of a mixture of o-xylene or naphthalene and air, a stage of separation of the crude phthalic anhydride from the reaction gas by cooling, and a stage of purification of the crude phthalic anhydride by rectification under vacuum, said vacuum being maintained by at least one jet pump, the improvement which comprises employing compressed air as the operating medium for said jet pump, and recycling resultant compressed air loaded with the exhaust gas to a process gas upstream of the phthalic anhydride separation stage, said process gas being any gas leading to the separation stage.

4,269,777

ISOTOPICALLY LABELED VITAMIN D DERIVATIVES AND PROCESSES FOR PREPARING SAME

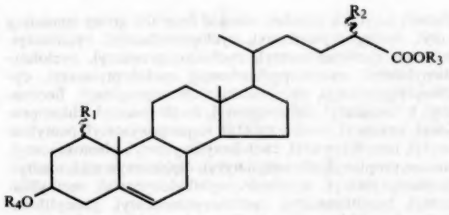
Hector F. De Luca; Heinrich K. Schnoes, both of Madison, Wis.; Joseph L. Napoli, Dallas, Tex., and Mary A. Fivizzani, Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed May 21, 1979, Ser. No. 41,080

Int. Cl.[3] **C07J** *9/00*

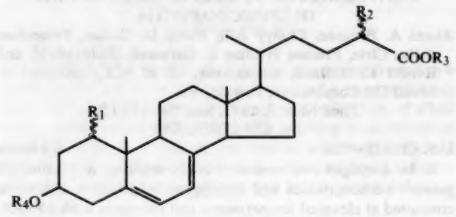
U.S. Cl. 260—397.1 **23 Claims**

11. Compounds of the structure



where each of R_1 and R_2 is selected from the group consisting of hydrogen, hydroxy, and O-acyl with the proviso that R_1 and R_2 cannot both be hydrogen and R_3 is an alkyl group of from 1 to about 4 carbon atoms and R_4 is hydrogen or acyl.

15. Compounds of the structure



where each of R_1 and R_2 is selected from the group consisting of hydrogen, hydroxy, O-acyl, except that R_1 and R_2 cannot both be hydrogen, and where R_3 is an alkyl group of from 1 to 4 carbon atoms and where R_4 is selected from hydrogen or acyl.

4,269,778

PROCESS FOR THE PREPARATION OF STEROIDS

Dieran R. Torossian, Bourg-La-Reine, and Gilbert G. Aubard, Palaiseau, both of France, assignors to SIPSY, Avrille, France

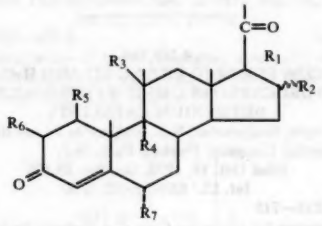
Filed Nov. 20, 1979, Ser. No. 96,153

Claims priority, application France, Dec. 1, 1978, 78 33959

Int. Cl.[3] **C07J** *5/00*

U.S. Cl. 260—397.45 **10 Claims**

1. In a process for the preparation of a steriod of formula A—CH_2—S—COR in which R is alkyl, cycloalkyl, aryl, aralkyl or alkylaryl and A is the monovalent steriod group of formula:



in which:

R_1 is hydrogen or hydroxy,

R_2 is hydrogen or an α-methyl or β-methyl group,

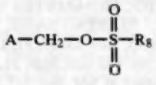
R_3 is hydroxy or oxo

R_4 is hydrogen or fluorine,

R_5 and R_6 are each hydrogen or together form a double bond between the carbon atoms carrying them,

R_7 is hydrogen or fluorine,

whereby an alcohol of formula A—CH_2OH is sulphonated with a sulphonating agent of formula $(R_8SO_2)_n$—Y in which R_8 is a monovalent saturated hydrocarbon group and Y is oxygen when n is equal to 2, but is a halogen when n is equal to 1 in a dissolving or suspending medium in the presence of a stoichiometric excess of an amine to obtain a sulphonate of formula:



which is thiocarboxylated by a reaction with a solution in acetone or in dimethylformamide of a thiocarboxylate of formula M—S—CO—R in which M is an alkali metal or a trialkylamine group, the improvement which consists in effecting the sulphonation in the same medium as that used for the thiocarboxylation with a sulphonating agent whose group R_8 is aliphatic and in the presence of a lower trialkylamine as acid binding agent and in effecting the thiocarboxylation by bringing the solution or suspension of intermediate suphonate directly in contact with the solution of thiocarboxylate without intermediate isolation of the sulphonate.

2. Process according to claim 1, which consists in using in the suphonating step 3 to 15 liters of suspending or dissolving medium per mole of alcohol used.

4,269,779

19-HYDROXY-19-METHYL-6-OXO-PGF_1 AMIDES

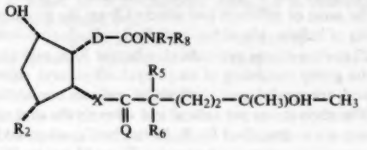
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 54,720, Jul. 5, 1979, Pat. No. 4,225,507. This application Mar. 3, 1980, Ser. No. 126,494

Int. Cl.[3] **C07C** *103/18, 103/19*

U.S. Cl. 260—404 **1 Claim**

1. A prostacyclin-type compound of the formula



wherein D is $-(CH_2)_2-CO-CH_2-L_2-$ or $-CH_2-CO-CH_2-L_3-$

wherein L_2 is

(1) $-(CH_2)_j$, wherein j is one to 4, inclusive,

(2) $-(CH_2)_q-CF_2-$, wherein q is one, 2, or 3, or

(3) $-CH=CH-$,

wherein L_3 is

(1) $-(CH_2)_n-$, wherein n is one to 5, inclusive,

(2) $-(CH_2)_p-CF_2-$, wherein p is 2, 3, or 4, or

(3) $-CH_2-CH=CH-$;

wherein Q is oxo, α-H:β-H, α-OH:β-R_4, or α-R_4:β-OH, wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,

wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl;

wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro;

wherein R_7 and R_8 are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different;

wherein X is

(1) trans—CH=CH—,

(2) cis—CH=CH—,

(3) —C≡C—, or

(4) $-CH_2CH_2-$.

4,269,780

OLEFIN DISPROPORTIONATION

Dennis S. Banasiak, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 6, 1979, Ser. No. 101,031

Int. Cl.[3] **C09F** *5/00;* **C11C** *3/00, 3/02*

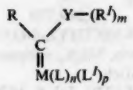
U.S. Cl. 260—405 **66 Claims**

1. A process for forming non-polymeric disproportionation products comprising contacting suitable non-conjugated olefinic reactants under suitable reaction conditions with a catalytic amount of a catalyst composition comprising effective amounts of

(1) at least one metal compound component selected from the group consisting of the chlorides and bromides of Groups IVa, IVb, Vb, VIb, VIIb, VIII, and Ib; and the oxychlorides and oxybromides of molybdenum tungsten, vanadium, and chromium, wherein if the metal is vanadium it is in an oxidation state of either 4 or its highest

stable common ionic oxidation state, if the metal if molybdenum, tungsten, or rhenium, it is in an oxidation state of either 5 or its highest stable common ionic oxidation state; and if the metal is other than vanadium, molybdenum, tungsten, or rhenium, the metal is in its highest stable common ionic oxidation state; and

(2) at least one neutral carbene complex having the general formula



wherein R is selected from the group consisting of alkyl or cycloalkyl radicals containing 1 to 10 carbons per radical and aryl or substituted aryl radicals containing 6 to 30 carbon atoms per radical wherein the substituted radicals can have one or more substituents each of which can be the same or different and selected from the group consisting of halides, alkoxides, and alkyl radicals containing 1 to 20 carbon atoms per radical; wherein R^I is selected from the group consisting of alkyl, cycloalkyl, aryl, substituted aryl, triarylsilyl, and trialkylsilyl radicals containing 1 to 30 carbon atoms per radical and wherein the aryl substituents are as described for R; M can be Cr, when said metal compound component contains Ti; or M can be W or Re; Y is O, Se, S, N, or P; each L is a neutral ligand individually selected from CO, NO, Pr_3^I, PCl_3, PF_3, and pyridine, where R^I is as defined above, and L^I is cyclopentadienyl; p is 0 or 1; n is 5 when p is 0 or 2 when p is 1; and m is 2 when y is N or P and 1 when Y is 0, Se, or S.

4,269,781

DIMERIC CARBONYLATION OF 1,3-BUTADIENE

Thomas H. Vanderspurt, Stockton, and Paul M. Zema, Kenilworth, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Feb. 8, 1980, Ser. No. 119,683
Int. Cl.³ C11C *3/02*
U.S. Cl. 260—410.9 R **32 Claims**

1. A process for producing and recovering alkyl nonadienoate which comprises the steps of (1) reacting 1,3-butadiene with carbon monoxide and a water-soluble alkanol containing between about 0.5–10 weight percent of water, in the presence of a catalyst complex of palladium and tertiary phosphine ligand, to yield a liquid phase product mixture containing alkyl nonadienoate; (2) contacting the product mixture with a hydrocarbon solvent to form two liquid phases; and (3) separating the two liquid phases, and recovering alkyl nonadienoate from the hydrocarbon solvent phase.

4,269,782

PREPARATION OF MIXTURES OF METHYLTIN TRICHLORIDE AND DIMETHYLTIN DICHLORIDE FROM STANNIC CHLORIDE AND DIMETHYLTIN DICHLORIDE

Gerald Spiegelman, Wayne, and Koei-Liang Liauw, Wyckoff, both of N.J., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Filed Jul. 19, 1979, Ser. No. 59,094
Int. Cl.³ C07F *7/22*
U.S. Cl. 260—429.7 **3 Claims**

1. A process for preparing a product comprising a mixture of dimethyltin dichloride and monomethyltin trichloride by heating under superatmospheric pressure dimethyltin dichloride with 0.1 to 0.7 molar proportion of stannic chloride in the absence of catalyst.

4,269,783

CONVERSION OF SYNGAS TO HIGH OCTANE OLEFINIC NAPHTHA

James A. Brennan, Cherry Hill; Philip D. Caesar, Princeton; Julius Ciric, Pitman; William E. Garwood, Haddonfield, and Robert E. Holland, Runnemede, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Mar. 7, 1977, Ser. No. 775,129
Int. Cl.³ C07C *27/06*
U.S. Cl. 518—718 **6 Claims**

1. In a syngas conversion process wherein a mixture of gaseous carbon oxides and hydrogen at hydrogen donors is contacted at elevated temperatures and pressures with a Fischer-Tropsch catalyst, the improvement which comprises carrying out said conversion at a temperature of from 500° to 800° F., a space velocity of from 1000 to 30,000 GHSV, and a pressure of from 100 to 1000 psig with a catalyst composite comprised of an intimate mixture of an iron Fischer-Tropsch component and a component containing an acidic solid wherein the volume ratio of said component containing an acidic solid to said iron Fischer-Tropsch component is 1–20, said acidic solid being selected from the group consisting of hydrogen exchanged silica-alumina, silica-magnesia, erionite, mordenite, faujasite, and ZSM-4 with the proviso that when the acidic solid is silica-alumina or silica-magnesia, the temperature is at least 600° F., and with the further proviso that when the acidic solid is a zeolite, the zeolite has no more than 0.5 wt.% of alkali metal cations associated therewith, and recovering a product comprising an olefinic naphtha having a boiling range of less than 400° F. at 90% overhead with an aromatic content less than 20 weight percent, an olefin plus aromatic content of at least 50 weight wherein the olefins have predominantly internal double bonds.

4,269,784

PROCESS FOR CONVERTING CO AND H_2O INTO HYDROCARBONS USING WATER-SOLUBLE RUTHENIUM CATALYSTS

Gerald Doyle, Bridgewater, N.J., assignor to Exxon Research & Engineering Company, Florham Park, N.J.

Filed Oct. 15, 1979, Ser. No. 85,106
Int. Cl.³ C07C *1/02, 1/10*
U.S. Cl. 518—715 **6 Claims**

1. A process for preparing C_9 to C_{60} aliphatic hydrocarbons or their deuterated or tritiated derivatives which comprises:

contacting CO and water selected from at least one of the groups consisting of H_2O, D_2O, and T_2O in the presence of a homogeneous aqueous solution containing a catalytically effective amount of water-soluble ruthenium compound selected from the group consisting of ruthenium halide, ruthenium acetyl acetonate and a complex salt of the formula $(RuL_6)^n$ where L is halide, amine, phosphine, nitric oxide, carbon monoxide, cyanide, aquo, sulfite or mixtures thereof and n is a number from −4 to +3; and

heating the solution to temperatures of from 200° to 500° C. at pressures of from 0.1 to 100 MPa.

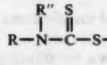
4,269,785

TRIALKYLDITHIOCARBAMATES AND METHOD OF MAKING SAME

Lawrence H. Nash, P.O. Box 23837, Ft. Lauderdale, Fla. 33307

Continuation of Ser. No. 888,633, Mar. 21, 1978, abandoned, and a continuation-in-part of Ser. No. 717,137, Aug. 24, 1976, abandoned, which is a continuation-in-part of Ser. No. 671,932, Mar. 30, 1976, abandoned. This application Jul. 18, 1979, Ser. No. 58,663
Int. Cl.³ A01N *47/10*; C07C *155/08*
U.S. Cl. 260—455 A **4 Claims**

1. A process for preparing a compound of the formula:



wherein R and R' are each alkyl groups containing from 1 to 6 carbon atoms and R" is hydrogen or an alkyl group containing from 1 to 6 carbon atoms, said compound being free of alkali metal, of side products from reactions resulting from the use of an alkali metal hydroxide in synthesis of said compound, and free of ethylene thiourea; and said compound being substantially free of color, water-soluble, and forming clear solutions with water;

said process comprising the steps of (a) reacting a first compound of the formula RR"NH wherein R is an alkyl group of 1 to 6 carbon atoms and R" is hydrogen or an alkyl group of 1 to 6 carbon atoms, a second compound of the formula $R'NH_2$ wherein R' is an alkyl group of 1 to 6 carbon atoms, and CS_2 is aqueous solution, said reaction being carried out in said aqueous solution within an enclosed chamber for a period of time sufficient to permit the pressure therein to fall below an atmospheric pressure of about 760 mm. Hg., whereby said compound and ammonia are formed, (b) opening the reactor and removing the ammonia, and (c) recovering said compound.

4,269,786

ALKYL GLYCERYL ETHER SULFATE SALTS AND PROCESS FOR THEIR PREPARATION

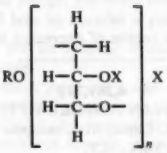
Sidney Berkowitz, Highland Park, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 960,342, Nov. 13, 1978, Pat. No. 4,217,296, which is a continuation-in-part of Ser. No. 927,183, Jul. 24, 1978, abandoned. This application Nov. 15, 1979, Ser. No. 95,032

Int. Cl.³ C07C *141/08*

U.S. Cl. 260—458 R **23 Claims**

1. A composition of matter consisting essentially of a mixture of sulfated alkyl mono-and poly-glyceryl ether alcohol compounds of the general formula:



wherein R is a linear alkyl radical containing from about 10 to about 20 carbon atoms, n is an integer from 1 to 3, and X is selected from the group consisting of hydrogen and sulfonic acid salt radicals, at least one X in each compound of the mixture being a sulfonic acid salt radical.

4,269,787

BIFUNCTIONAL MONOMERS HAVING TERMINAL OXIME AND CYANO OR AMIDINE GROUPS

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Robert W. Rosser; Ibrahim M. Shalhoub, both of San Jose, Calif., and Hanoi Kwong, Sacramento, Calif.

Division of Ser. No. 28,301, Apr. 9, 1979. This application Apr. 30, 1980, Ser. No. 145,283

Int. Cl.³ C07C *121/43, 123/00*

U.S. Cl. 260—465.5 R **1 Claim**

1. A bifunctional monomeric compound having the formula Q-R-C(NOH)NH_2, wherein: (a) R is a bivalent organic radical selected from the class consisting of alkylene radicals of the formula $—(CX_2)_p—$ and alkylether radicals of the formula

$—CFY(OCF_2CFY)_mO(CX_2)_pO(CFYCF_2O)_n-CFY—$,

or mixtures thereof, wherein X is fluorine of hydrogen, Y is fluorine or trifluoromethyl, p ranges from 1 to about 18, and m+n ranges from 2 to about 7; and (b) Q is a group selected from the triazine ring-forming class consisting of —C=N and

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4,269,788

PHENYL-CYCLOHEXADIENE-ALKYLAMINE DERIVATIVES

Peter M. Müller, Arlesheim; Rudolf Pfister, and Rene Urban, both of Basel, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

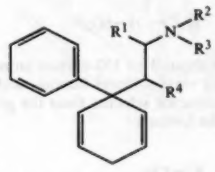
Filed Oct. 4, 1979, Ser. No. 81,712

Claims priority, application Switzerland, Oct. 11, 1978, 10552/78

Int. Cl.³ C07C *91/16*

U.S. Cl. 260—501.1 **4 Claims**

1. A compound of the formula



I

wherein R^1 is hydrogen or methyl, R^2 is hydrogen, methyl or ethyl, R^3 is methyl or ethyl and R^4 is hydrogen or methyl; provided that at least one of R^1 and R^4 is hydrogen; a pharmaceutically acceptable acid addition salt thereof, or an optically active antipode of a compound of formula I which has an asymmetric carbon atom.

4,269,789

PETROLEUM SULFONATION

David R. Zornes, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 31, 1979, Ser. No. 108,303

Int. Cl.³ C07C *143/24*

U.S. Cl. 260—505 P **9 Claims**

1. In a process for producing petroleum sulfonates comprising

(a) sulfonating a hydrocarbon oil feedstock by contacting said feedstock with a sulfonating agent under sulfonating conditions to obtain a sulfonated product,

(b) neutralizing said sulfonated product by contacting it with a basic neutralizing agent to obtain a neutralized product,

(c) contacting said neutralized product with a separating agent comprising alcohol and water to form a separation mixture,

(d) having the separation mixture separate into

a top phase

an intermediate phase and

a bottom phase, and

(e) recovering a petroleum sulfonate product from said intermediate phase

the improvement comprising using as said separating agent in step (c) one that comprises in addition to water and a lower alcohol a lower alkane selected from the alkanes

and cycloalkanes having 5 to 10 carbons and mixtures thereof.

4,269,790

HYDROCARBYLETHYL SULFONYL FLUORIDE

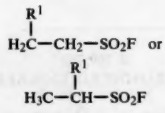
Louis de Vries, Greenbrae, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 889,314, Mar. 23, 1978, abandoned. This application Jun. 18, 1979, Ser. No. 49,995

Int. Cl.³ C07C *143/70*

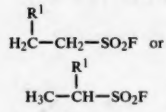
U.S. Cl. 260—543 F **4 Claims**

1. Compounds having the formula

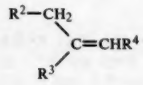


wherein R_1 is a polymeric 1-olefin-derived hydrocarbyl group of from 50 to 150 carbon atoms with 1 to 3 double bonds.

2. A process for the preparation of hydrocarbylethyl sulfonyl fluorides of the formula:



wherein R^1 contains about 3 to 350 carbon atoms consisting essentially of reacting vinyl sulfonyl fluoride with an unsaturated hydrocarbyl precursor selected from the group consisting of; an olefin of the formula:



wherein R^2 is hydrogen, an alkyl group of 1 to 20 carbon atoms, an alkenyl group of 3 to 20 carbon atoms, a cycloalkyl group of 5 to 12 carbon atoms, or an aryl group of 6 to 12 carbon atoms, R^3 and R^4 are independently hydrogen, an alkyl group of 1 to 20 carbon atoms, an alkenyl group of 3 to 20 carbon atoms or a cycloalkyl group of 5 to 12 carbon atoms, provided that the total number of carbon atoms in R^2, R^3 and R^4 is less than 21, or R^2 may be joined to either of R^3 or R^4 to form a 5 to 12 membered carbocyclic ring; an olefin polymer or copolymer, at a temperature of from 100° to 300° C.

4,269,791

HYDROGEN-OXYGEN MIXER APPARATUS AND PROCESS

Brian A. Hills, Houston, Tex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 14, 1977, Ser. No. 851,243

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—36 R **5 Claims**

1. A method for providing a mixture of gases for diving comprising:

forming a column of liquid;

inducing a region of turbulent flow in a portion of said liquid column;

introducing bubbles of a first gas into said region;

separately introducing bubbles of at least one different gas into the same region, said bubbles being introduced into said turbulent region such that gas transfer between the bubbles produces a mixture of said first and at least one different gas by equilibriation between the bubbles within the liquid;

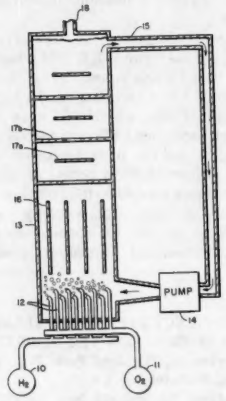
withdrawing a mixture of said first and at least one different gas from said column of liquid; and

providing said mixture as a breathing gas for diving.

2. An apparatus for providing a mixture of multiple gases comprising:

means for providing a column of liquid;

means for inducing a turbulent flow at one end of said column and decreasing said turbulence along said column to the opposite end;



means for introducing bubbles of a plurality of gases into said region of turbulent flow such that gas transfer between the bubbles produces a mixture of said plurality of gases by equilibriation between the bubbles within the liquid, said means for introducing including,

a source of hydrogen and a source of oxygen each coupled to a plurality of needle injectors positioned to provide said gas bubbles to said turbulent region, and

means for extracting a mixture of said hydrogen and said oxygen from the region of decreased turbulence.

4,269,792

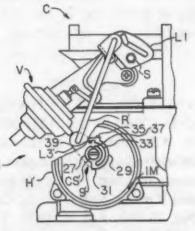
TAMPER RESISTANT CHOKE OPENING MEANS

Jerry H. Winkley, St. Louis, Mo., assignor to ACF Industries Incorporated, New York, N.Y.

Filed Feb. 13, 1980, Ser. No. 120,973

Int. Cl.³ F02M *1/08*

U.S. Cl. 261—39 B **11 Claims**



1. In a carburetor for an internal combustion engine, the carburetor having an air induction passage, a choke valve mounted in the passage and including a disk mounted on a rotatable choke shaft, a choke lever attached to one end of the choke shaft, a vacuum unit acting on the choke lever to effect an initial opening of the choke valve when the engine is started,

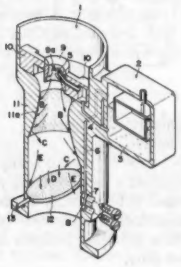
the improvement comprising tamper resistant temperature responsive means for controlling further opening of the choke valve as the engine warms up, the means including a housing, a choke countershaft one end of which extends into the housing, a cover attachable to the housing and containing a thermostatic coil, a lever attached to the one end of the counter shaft and having a tang contacted by one end of the thermostatic coil thereby for the coil to exert a choke valve closing force on the lever, the force lessening as the engine heats up, and a substantially straight, nondeformable link connecting the choke countershaft and the choke lever, the lever within the choke housing being adjustable by a suitable adjusting tool to position the lever so opening of the choke valve is properly controlled thereby to aid in controlling engine emissions and whereby the setting of the lever cannot be tampered with once the cover is attached to the choke housing.

4,269,793

CARBURETTOR FOR INTERNAL COMBUSTION ENGINE

Jack K. Ibbott, 4-17-7 Nishi Azabu, Minato-Ku, Tokyo, Japan

Continuation of Ser. No. 732,288, Oct. 14, 1976, abandoned, which is a continuation-in-part of Ser. No. 610,886, Sep. 5, 1975, abandoned. This application Jun. 26, 1978, Ser. No. 919,309
Claims priority, application Japan, Jul. 25, 1975, 50-91012
Int. Cl.³ F02M *29/14*
U.S. Cl. 261—65 **17 Claims**



1. A carburetor for an internal combustion engine, said carburettor comprising:

a venturi into which passes air, said venturi including a throat and a portion diverging in the downstream direction from said throat, the pressure in said venturi increasing in the downstream direction from said throat;

main fuel delivery orifice means for spraying liquid fuel into the interior of said venturi at said throat such that a portion of said sprayed fuel is converted into vapor which joins with said air to form an air and vaporized fuel mixture and a further portion of said sprayed fuel is thrown in liquid form against the interior walls of said diverging portion of said venturi;

a butterfly throttle valve positioned downstream of said venturi and comprising a disc having a first surface facing said venturi and a second surface facing away from said venturi, the pressure within said carburetor adjacent said first surface being greater than the pressure adjacent said second surface; and

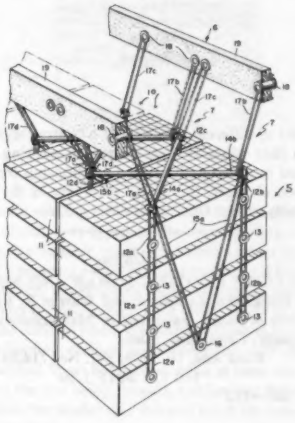
said venturi being provided from said throat longitudinally throughout said diverging portion with means for vaporizing any liquid portion of said fuel passing thereby, said means comprising porous material having a porosity of less than 2μ and formed of minute interconnected cells, said porosity being insufficient to allow passage through said porous material of said air and vaporized fuel mixture and insufficient to allow any condensation within said porous material of the thus vaporized fuel, said porous material being capable of being wetted by said fuel in liquid form, such that said liquid fuel is absorbed by said porous material and all of said absorbed fuel is vaporized internally of said porous material and is released therefrom in vapor form in said downstream directions due to said porosity and said increasing pressure.

4,269,794

FIRE CONTROL SYSTEM FOR A GAS AND LIQUID CONTACT APPARATUS

Jacques G. P. E. Bosne, Viroflay, and Christian A. A. Chofflet, Paris, both of France, assignors to Hamon Sobelco, Belgium

Filed Jul. 11, 1980, Ser. No. 168,686
Claims priority, application France, Sep. 3, 1979, 79 21986
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—108 **9 Claims**



1. A gas and fluid contact assembly comprising:

an enclosure;

a lower peripheral gas inlet for the enclosure and an upper gas outlet from the enclosure;

a combustible fluid/gas contact unit for the enclosure;

means for suspending said contact unit in the enclosure above the peripheral gas inlet; and

said suspending means characterized by including temperature responsive release means to release said contact unit at a predetermined temperature at the most equal to the ignition temperature of the contact unit.

4,269,795

PACKING IN WET COOLING TOWERS AND METHOD OF AND MEANS FOR SUPPORTING THE PACKING

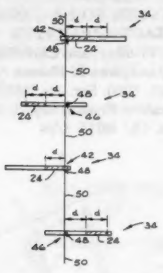
Peter B. Bosman, Sandton, South Africa, assignor to WLPU Holdings Limited, Johannesburg, South Africa

Filed Mar. 20, 1979, Ser. No. 22,280
Claims priority, application South Africa, Mar. 22, 1978, 78/1679
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—111 **20 Claims**

1. A method of supporting a packing element of a packing in an evaporative cooling tower, the packing being of the splash pack type which splits and diffuses a spray of heated liquid into smaller droplets and the packing element is adapted to split and diffuse the spray of liquid into smaller droplets, the packing including at least two vertically spaced packing elements having each at least one elongate splash member, the method including suspending each packing element at a central region thereof from a common suspension element so that the packing elements are vertically spaced from each other and so that the splash members are substantially parallel and are horizontally off-set from each other.

6. A packing element for an evaporative cooling tower of

the splash pack type which is adapted to split and diffuse a spray of heated liquid into smaller droplets, the packing element having at least one splash member for splitting and diffusing the spray of heated liquid into smaller droplets, the packing element having support means by which the packing element is



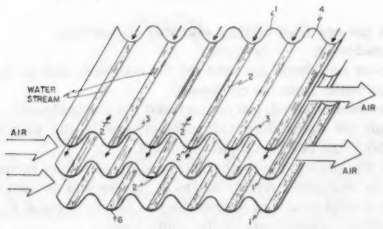
suspended in different positions at a central region of the element so that when at least two such packing elements are suspended in a vertically spaced relationship from a common suspension element, the splash members in the elements are horizontally off-set from each other.

4,269,796

WET/DRY COOLING TOWER AND METHOD

Leon R. Glicksman, Lynnfield, and Warren R. Rohsenow, Waban, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 16, 1976, Ser. No. 714,557
Int. Cl.[2] B01F *3/04*
U.S. Cl. 261—112 **11 Claims**



1. A method of cooling hot water which comprises:
(a) providing a flow of hot water in spaced wetted areas across the surface of an element having high heat transmission characteristics so as to leave non-wetted dry areas intermediate wetted areas in such a manner that the intermediate dry areas are larger than the wetted areas,
(b) permitting the heat of the wetted areas from the hot water to be transmitted through the element to the dry areas,
(c) providing a flow of cooling air on said element in contact with said wet and dry areas to thus extract most of the total heat of the hot water by cooling of said dry areas without dependence on evaporation and a lesser amount of cooling by evaporation from said wetted areas.

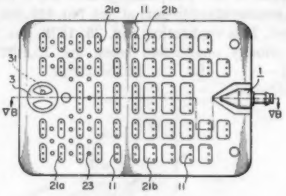
2. A cooling tower system for cooling hot water comprising, in combination, a source of hot water to be cooled, a highly heat conductive heat transfer element having a surface disposed to receive hot water from said source thereon and being provided with a plurality of discrete spaced open channels arranged to flow substantially all said hot water on spaced areas wetted thereby leaving larger substantially dry areas intermediate said wetted areas wherein the heat of said hot water is distributed by conduction throughout said element from said wetted areas to said dry areas;
a source of cooling air disposed to move air across the surface of said element primarily cooling the dry areas by extraction of heat therefrom transmitted thereto from said wetted areas whereby the greater portion of total heat of said hot water is thus removed via said dry areas by air flow contact therewith without dependence on evaporation and a lesser portion of total heat removed by evaporation effected by the flow of cooling air in contact with said wetted areas.

4,269,797

BUBBLE GENERATOR

Toshio Mikiya; Tadahisa Mogaki, and Nobuyuki Nozawa, all of Tokyo, Japan, assignors to Nikki Co., Ltd., Japan

Filed Jun. 6, 1980, Ser. No. 157,095
Claims priority, application Japan, Nov. 22, 1979, 54-163033[U]
Int. Cl.[3] B01F *3/04*
U.S. Cl. 261—122 **6 Claims**



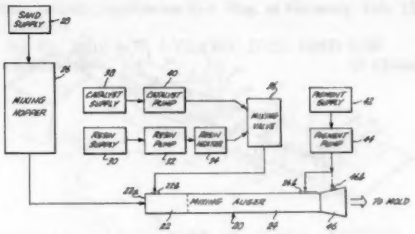
1. A bubble generator comprising
a bubble plate and an adjuster plate slidably coupled to each other in order to be registered at any one of three different bubbling positions a first bubbling position allowing generation of small bubbles only, a second bubbling position allowing simultaneous generation of small and large bubbles and a third bubbling position allowing generation of large bubbles only;
said bubble plate including
an air chamber to be connected to a given supply source of compressed air, and
a bubble generating face provided with a number of aligned bubble holes communicating with said air chamber,
said bubble holes being arranged in parallel rows which run substantially normal to the sliding direction of the plates at equal center pitch;
said adjuster plate including
aligned small slots formed in the one half of its bubble generating face along said sliding direction of the plates, said small slots being larger in width than the largest contour of said bubble holes in said bubble plate, and arranged in parallel rows which run substantially normal to said sliding direction of the plates at equal center pitch,
aligned bubble holes arranged in parallel rows between and parallel to adjacent said rows of said small slots, said bubble holes being larger in contour than said bubble holes in said bubble plate, and communicating with associated recesses defined by walls for said small slots on the back side of said adjuster plate, and
aligned large slots formed in the other half of said bubble generating face along said sliding direction of the plate, said large slot being larger in width than said smaller slots and arranged in parallel rows which run substantially normal to said sliding direction of the plates at equal center pitch; and
center pitches between adjacent rows of said small slots, adjacent rows of said bubble holes and adjacent rows of said large slots in said adjuster plate being all equal to said center pitch between said adjacent rows of said bubble holes in said bubble plate.

4,269,798

METHOD FOR PRODUCING A CURABLE, FILLED RESIN COMPOSITION, E.G., ARTIFICIAL MARBLE

Frank E. Ives, 26601 Dover Ct., Kent, Wash. 98031

Filed Oct. 23, 1978, Ser. No. 953,798
Int. Cl.[3] B29B 1/10, 3/00, 5/00; B29C 9/00
U.S. Cl. 264—73 11 Claims



1. A method for producing a curable filled resin composition comprising the steps of:

feeding a dry, resin free, granular filler material to a first location in a tubular conveying zone,

separately feeding a curable, thermosetting filler free, polyester resin to a second location in said conveying zone downstream from said first location, said resin being at a temperature above room temperature and below 140° F. when it is fed to the conveying zone,

conveying said filler material and said resin under confinement through said conveying zone to a confined mixing zone, said mixing zone being tubular and being an axial extension of said tubular conveying zone, said filler material and said resin being subjected to pressure in said conveying zone so as to force the resin and filler material into and through said mixing zone, and mechanically mixing said filler material and said resin by subjecting the filler material and resin to shear forces both in circumferential and axial directions relative to said tubular mixing zone, thereby to form an uncured filled resin composition,

transferring said composition to a mold immediately after it exits from the confinement of said mixing zone without further mixing, and

allowing said composition to cure.

4,269,799

METHOD OF FORMING FUSION CAST REFRACTORIES

Dale L. Rockwell, Belleville, Ill., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 31, 1979, Ser. No. 108,619
Int. Cl.[3] C04B 35/60
U.S. Cl. 264—85 2 Claims

1. A method of forming a fusion cast refractory comprising the steps of:

(a) providing a mold for said refractory having a mold cavity of the desired shape, said mold including an organic binder and said cavity containing air;

(b) introducing an inert gas which is heavier than air into said mold cavity whereby said air is displaced from said mold cavity; and

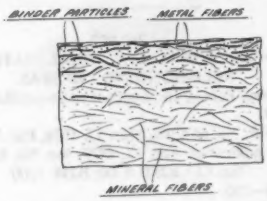
(c) pouring molten fusion cast refractory material into said mold cavity and allowing it to solidify.

4,269,800

PROCESS FOR THE PREPARATION OF A COMPOSITE MAT CONSISTING OF A LAYER OF MINERAL WOOL AND A LAYER OF STEEL WOOL

Rolf Sommer, Darmstadt; Gustav Schweinfurth, Frankenthal, and Heinz-Jurgen Ungerer, Virnheim, all of Fed. Rep. of Germany, assignors to Saint-Gobain Industries, France

Filed Oct. 18, 1978, Ser. No. 952,336
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1977, 2746796
Int. Cl.[3] B22F 3/24
U.S. Cl. 264—111 3 Claims



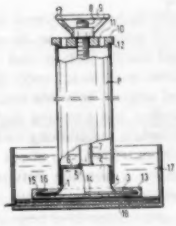
1. A process for making a composite fibrous mat incorporating a mixture of different types of fibers, comprising spraying a liquid thermo-hardenable binder on mineral fibers and forming the mat by scattering and depositing the mineral fibers onto a collecting surface, intertwining fleece-like metal fibers with the mineral fibers by distributing such metal fibers in the mineral fibers as the mineral fibers are being deposited to form the mat on the collecting surface, such distribution of the metal fibers in the mineral fibers being effected in at least one surface layer portion of the mat being formed, and heating the composite mat to harden the binder and thereby bond the mineral and metal fibers together.

4,269,801

METHOD AND DEVICE FOR FORMING A FLANGE ON A TUBULAR ELEMENT OF A SYNTHETIC RESIN

Hendrik Klasema, Bergen op Zoom, Netherlands, and Hendrikus A. Prince, Kometenlaan 29, Bergen op Zoom, Netherlands, assignors to Hendrikus Andreas Prince, Bergen op Zoom, Netherlands

Filed Mar. 16, 1978, Ser. No. 887,308
Claims priority, application Netherlands, Mar. 16, 1977, 7702866
Int. Cl.[3] B29C 17/00
U.S. Cl. 264—156 7 Claims



1. The method of producing a flange at one end of a tubular element of thermoplastic synthetic resinous material which comprises the steps of:

(a) providing a cylindrical molding body having a gradually radially flaring guide surface at one end thereof;

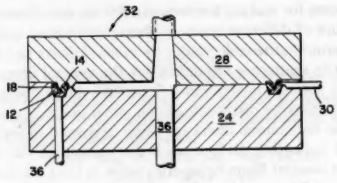
(b) securing a split, annular element to said one end of the molding body to provide at least an upstanding annular stop surface concentric with the molding body;

(c) sliding the tubular element onto said molding body;
(d) heating the molding body and at least that portion of the tubular element surrounding said molding body until the softening point temperature of said synthetic resinous material is reached and then forcing said tubular element axially of said molding body to form a flange which engages said stop surface;
(e) cooling said molding body and the flange end of the tubular element below said softening point temperature; and then
(f) splitting and removing said annular element to release the finished article.

4,269,802
PROCESS FOR MAKING DUAL-MATERIAL SELF-BONDING LIP SEAL

Terry D. Linne, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 667,769, Mar. 17, 1976, Pat. No. 4,066,269. This application Aug. 12, 1977, Ser. No. 824,144
Int. Cl.[3] B29D *9/00*; B29F *1/00*
U.S. Cl. 264—255 **10 Claims**



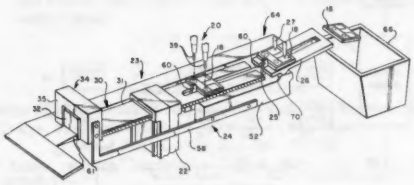
1. A process for the injection molding of a unitary seal having a support section formed of a high modulus rigid polycarbonate plastic and a sealing section formed of a polyurethane elastomeric material, consisting essentially of:
injecting sufficient polycarbonate, heated on a temperature from about 200° C. to about 400° C., into a first injection mold to fill said first injection mold;
retaining said polycarbonate in said first injection mold for a time sufficient to allow solidification of said polycarbonate and formation thereof into said support section;
forming a second injection mold with a surface portion of said support section defining a portion of the surface of said second injection mold;
injecting polyurethane elastomer, heated to a temperature from about 150° C. to about 300° C., into said second injection mold in a sufficient amount to fill said second injection mold;
confining said polyurethane elastomer in said second injection mold for a time sufficient to allow solidification thereof into said sealing section; and
retaining said second mold intact under sufficient pressure to retain a pressed contact between said surface portion of said support section and a mating surface portion of said sealing section, while maintaining said sections at a temperature from about 50° C. to about 400° C. for a time sufficient to cause a bonding between said contacting surface portions to form said unitary seal.

4,269,803
SLIDE TRANSFER MECHANISM

Thomas C. Jessop, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 2, 1979, Ser. No. 54,063
Int. Cl.[3] G01N *21/01, 35/04*
U.S. Cl. 422—63 **15 Claims**

1. In an apparatus for chemical analysis of a sample fluid wherein operations are performed on an analysis slide at a plurality of stations in the apparatus, the combination comprising:
means defining a path for movement of a slide between and through said stations; and
transfer means for advancing a slide along said path, said transfer means comprising a first member for advancing a slide from a first station to a second station and a second

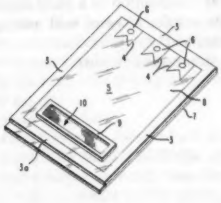


member for indexing the slide from said second station to a third station, said members being movable together to advance slides in each of said stations when a force is applied to said first member, and said second member being movable independently of said first member to advance slides in less than all of said stations when a force is applied to said second member.

4,269,804
SELF-CONTAINED GASEOUS CONTAMINANT DOSIMETER

Elbert V. Kring, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 69,574, Aug. 24, 1979, abandoned, which is a continuation-in-part of Ser. No. 922,546, Jul. 7, 1978, Pat. No. 4,208,371. This application Dec. 3, 1979, Ser. No. 99,704
The portion of the term of this patent subsequent to Jun. 17, 1997, has been disclaimed.
Int. Cl.[3] B01D *53/22, 59/10*; G01N *31/22, 33/00*
U.S. Cl. 422—86 **11 Claims**



1. A personal dosimeter for measuring the average concentration of a gaseous contaminant over a given period of time comprising:
a pouch-like receptacle of polymeric material having at least one compartment, the compartment occupying less than the total volume of the receptacle, leaving a reaction chamber, the compartment containing a pre-determined quantity of a color-forming reagent and being adapted to release the reagent into the reaction chamber independently of any other reagents present in any other compartments, and the reaction chamber containing a collecting medium for the gaseous contaminant; and
a gas diffusion device which is sealed into a boundary of the receptacle and through which the contaminant diffuses at a rate in linear proportion to its concentration in the atmosphere, the diffusion device providing the only communication between the atmosphere and the interior of the reaction chamber.

4,269,805
REACTOR FOR THE OXIDATION OF ALKYL AROMATICS WITH OXYGEN-CONTAINING GASES IN THE LIQUID PHASE

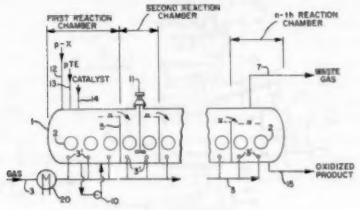
Anton Schoengen, Witten, and Heinrich Schroeder, Dortmund-Syburg, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Feb. 12, 1979, Ser. No. 11,656

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1978, 2805915

Int. Cl.[3] **B01J** *8/10, 8/12;* **C07C** *51/21;* **G05D** *9/00*

U.S. Cl. 422—106 **27 Claims**



1. A multi-stage reactor for the oxidation of alkyl aromatics, especially mixtures of p-xylene and methyl p-toluate in a liquid phase reaction mixture with oxygen-containing gases under elevated pressure and at an elevated temperature in the presence of an oxidation catalyst, which comprises an elongated closed tank having a multiplicity of reaction chambers arranged successively from one end to the other end of the tank for containing the liquid reaction mixture at predetermined levels in each chamber, an oxidizing gas feed system for introducing an oxygen-containing gas into each chamber, feed means for introducing at least one alkyl aromatic reactant and an oxidation catalyst into at least one of the chambers, a vapor-collecting conduit means in communication with each of said chambers for removing reaction gas from each of said chambers, discharge means for removing the oxidized product from the reactor tank, and an internally disposed cooling conduit system containing a coolant for removing the heat of reaction from said reactor tank including a group of cooling conduits for each of said reaction chambers, said groups comprising horizontally disposed cooling conduits arranged below the level of the liquid reaction mixture and exposed to transverse flow of the oxygen-containing gas through each of the reaction chambers.

4,269,806
SCRUBBER FOR REMOVAL OF SULFUR DIOXIDE FROM EXHAUST GAS

Kunihide Yaguchi; Masakazu Takaiwa, and Minoru Aoki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 7, 1979, Ser. No. 64,638

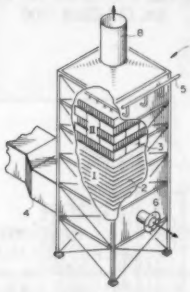
Int. Cl.[3] **B01D** *47/12;* **B01J** *10/02*

U.S. Cl. 422—171 **1 Claim**

1. A scrubber for removing sulfur dioxide from a sulfur dioxide containing exhaust gas with an aqueous absorbent containing a salt of an organic acid, comprising:

a zone (I) of absorbing sulfur dioxide, a zone (II) of absorbing vapor of organic acid on the upper side of said zone (I), an inlet for said exhaust gas beneath said zone (I), an inlet for said absorbent at the top of said zone (II), an outlet for the effluent of the absorbent at the bottom of said scrubber and an outlet for the discharge of the decontaminated exhaust gas at the top of said scrubber,

said zone (I) being provided with multistaged perforated plates in number of 5 to 20, each of said perforated plates having a plurality of holes of 3 to 10 mm in diameter and a perforation of 30 to 55% in area, and being disposed horizontally with an inter-plate distance of 40 to 500 mm, and said zone (I) being provided with multiple multistages of wetted walls with a total height of 1 to 4 meters, each of said stages of said wetted walls having a plurality of plates



placed vertically and in parallel, each of said stages being disposed horizontally an inter-stage distance of 100 to 300 mm and being piled up in number of more than 4 and having the direction of plates thereof different from that of adjacent stages, and said vertically placed plates being disposed with an inter-plate distance of 10 to 30 mm.

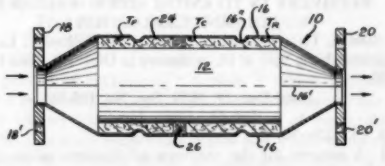
4,269,807
CATALYTIC CONVERTER MOUNTING ARRANGEMENT FOR REDUCING BYPASS LEAKAGE

Charles H. Bailey, Mt. Prospect; Ted V. DePalma, Schaumburg, and James E. Dillon, Elgin, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Oct. 22, 1979, Ser. No. 86,990

Int. Cl.[3] **F01N** *3/28;* **B23P** *19/04;* **B32B** *31/06*

U.S. Cl. 422—179 **4 Claims**



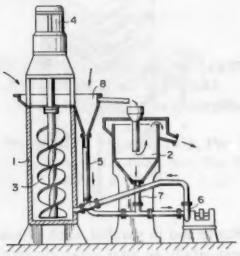
1. In a catalytic converter of the type having a ceramic monolithic catalyst element held within a metal housing by a blanket of resiliently compressed metal wire mesh, the improvement wherein a continuous circumferential band of intumescent material containing ceramic fibers is positioned within said mesh blanket and throughout the thickness thereof at at least one position along the axial length of said catalyst element, said band of intumescent material being of substantially less axial length than said catalyst element and expandable when heated so as to block any longitudinal bypass leakage through said wire mesh.

4,269,808

METHOD OF SIMULTANEOUSLY SUBJECTING ORES TO PULVERIZATION AND LEACHING OR EXTRACTION

Shigekatsu Kawabata, Tokyo, Japan, assignor to Seika Sangyo Co., Ltd. and Japan Tower Miller Co., Ltd., both of Tokyo, Japan

Filed Aug. 9, 1979, Ser. No. 65,051
Int. Cl.[3] C22B 3/00
U.S. Cl. 423—1 5 Claims



1. A process of treating ore, comprising the steps of:
(a) filling a shell of a vertical abrasion mill with an ore and a liquid solution, a mixture thereby being formed,
(b) pulverizing the ore into particles in the solution by circulating the ore in a generally vertical direction through said shell,
(c) obtaining an overflow stream from the mixture of the ore and the liquid solution,
(d) separating said overflow stream into a part containing larger particles and a part containing smaller particles, the part containing larger particles being recirculated to the shell and separating the part containing smaller particles into two subparts, a first subpart containing the larger of these particles and a second subpart containing the smaller of these particles, wherein the solution performs leaching or extraction during the pulverizing step.

4,269,809

RECOVERY IN TITANIUM METAL VALUES BY SOLVENT EXTRACTION

William K. Tolley, Arlington Heights, and William C. Laughlin, Schaumburg, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Dec. 19, 1979, Ser. No. 105,341
Int. Cl.[3] C01G 23/053
U.S. Cl. 423—70 6 Claims

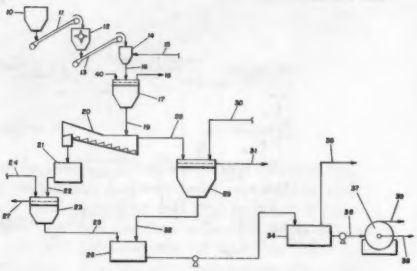
1. A process for the recovery of titanium values from a hydrochloric acid leach liquor containing titanium trichloride which comprises treating said leach liquor at a temperature of from about ambient to about 50° C. with a solution of mono- or di-2-ethylhexylphosphoric acid, contacting the resultant acid solution at a temperature of from about ambient to about 50° C., with an inorganic solution comprising a mixture of hydrogen peroxide and sulfuric or nitric acid to strip said titanium values from said acid solution, heating the resultant titanium-containing inorganic solution to a temperature of from about 100° to about 200° C. to hydrolyze titanium values to titanium dioxide precipitate, and separating said precipate from the inorganic solution.

4,269,810

METHOD FOR DESULFATION OF BATTERY MUD

Michael A. Kolakowski, Milltown, N.J., assignor to NL Industries, Inc., New York, N.Y.

Filed Oct. 10, 1978, Ser. No. 950,074
Int. Cl.[3] C01G 21/00, 21/12, 21/14
U.S. Cl. 423—92 5 Claims



1. A process for desulfating battery mud in a lead-acid battery recycling process, comprising:
a. crushing lead-acid batteries to obtain a crushed material comprising crushed battery cases and separators, crushed metallics, and battery mud comprising sulfuric acid, $PbSO_4$, PbO, and PbO_2;
b. adding an aqueous solution containing an alkali metal reagent in an amount sufficient to neutralize said sulfuric acid and to combine with essentially all of said $PbSO_4$, said alkali metal reagent being selected from the group consisting of water soluble alkali metal salts, alkali metal hydroxides, and admixtures thereof, to said crushed material to form an aqueous slurry of alkali metal sulfate and precipated lead compounds having a solids content of from about 10–20%;
c. separating said crushed battery cases and separators, and said crushed metallics from said battery mud containing said precipitated lead compounds; and
d. separating said battery mud from said alkali metal sulfate.

4,269,811

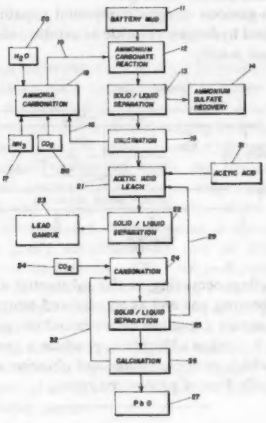
PRODUCTION OF LEAD MONOXIDE FROM LEAD SULFATE WITH ACETIC ACID

Eugene Striffler, Jr., Hightstown, and Michael A. Kolakowski, Milltown, both of N.J., assignors to NL Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 950,078, Oct. 10, 1978, abandoned. This application Mar. 3, 1980, Ser. No. 126,625
Int. Cl.[3] C01G 21/02
U.S. Cl. 423—92 17 Claims

1. A process for producing lead monoxide from solid lead sulfate bearing material which comprises:
(a) reacting said material with an ammonium carbonate solution to convert said lead sulfate to lead carbonate;
(b) decomposing substantially all of the lead carbonate to impure lead monoxide by heating at temperatures from about 400° to 650° C.,
(c) reacting the impure lead monoxide with an effective amount of an acetic acid solution to convert said lead monoxide to a lead acetate solution;
(d) separating said lead acetate solution from the insoluble impurities;

(e) contacting the lead acetate solution from step (d) with carbon dioxide gas to form lead carbonate; and



(f) decomposing the lead carbonate to produce lead monoxide.

4,269,812

HORIZONTAL CROSS-FLOW SCRUBBER FOR SULFUR OXIDE REMOVAL

William M. Edwards, and C. Peter Huang, both of Houston, Tex., assignors to Pullman Incorporated, Chicago, Ill.

Filed Jul. 27, 1979, Ser. No. 61,225
Int. Cl.[3] C01B *17/00*
U.S. Cl. 423—242 **6 Claims**

1. A process for removing sulfur dioxide from industrial waste gas comprising:

(a) passing the waste gas substantially horizontally through a horizontal, elongate, gas-liquid contacting zone having a substantially unrestricted flow path, a waste gas inlet at one end, and a cleaned gas outlet at the opposite end; and

(b) passing aqueous absorbent through the waste gas within at least a longitudinal portion of the gas-liquid contacting zone in a plurality of interfering cones of spray droplets having an initial Sauter mean diameter of from about 800 to about 2000 microns directed substantially vertically downward wherein the aqueous absorbent has a maximum interfering spray density at any horizontal plane within the longitudinal portion less than about 100 liters per second per square meter.

4,269,813

CRYSTALLINE BOROSILICATE AND PROCESS OF PREPARATION

Marvin R. Klotz, Batavia, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 836,403, Sep. 26, 1977, abandoned, Ser. No. 819,974, Jul. 28, 1977, abandoned, and Ser. No. 733,267, Oct. 18, 1976, abandoned. This application Apr. 18, 1978, Ser. No. 897,360
Int. Cl.[3] C01B *35/10*
U.S. Cl. 423—277 **41 Claims**

1. A crystalline borosilicate which comprises a molecular sieve material having the following composition in terms of mole ratios of oxides:

$$0.9 \pm 0.2 M_{2/n}O : B_2O_3 : YSiO_2 : ZH_2O$$

wherein M is at least one cation having a valence of n, Y is between 4 and about 600, and Z is between 0 and about 160, and providing an X-ray diffraction pattern comprising the following X-ray diffraction lines and assigned strengths:

d (A)	Assigned Strength
11.2 ± 0.2	W-VS
10.0 ± 0.2	W-MS
5.97 ± 0.07	W-M
3.82 ± 0.05	VS
3.70 ± 0.05	MS
3.62 ± 0.05	M-MS
2.97 ± 0.02	W-M
1.99 ± 0.02	VW-M

4,269,814

PROCESS FOR PREPARING CRYSTALLINE AMMONIUM DIHYDROGEN PHOSPHATE

Soichi Asagao; Masaru Nakatani; Shinsuke Nakagawa; Yoshiyuki Takahara, and Naoki Okada, all of Ube, Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Aug. 28, 1979, Ser. No. 70,499
Claims priority, application Japan, Aug. 30, 1978, 53-104864
Int. Cl.[3] C01B *25/28*
U.S. Cl. 423—308 **3 Claims**

1. A process for preparing crystalline ammonium dihydrogen phosphate from an aqueous solution of ammonium dihydrogen phosphate obtained from wet process phosphoric acid, comprising the steps of:

(a) adding ethylenediamine tetraacetate into the wet process ammonium dihydrogen phosphate aqueous solution, the amount of said ethylenediamine tetraacetate added being within a range of from 0.1 to 1 wt. percent relative to crystals of ammonium dihydrogen phosphate;

(b) heat-treating said aqueous solution at a temperature of 70° C. or more and for a time within a range of from 10 to 60 minutes, after addition of said ethylenediamine tetraacetate; and

(c) crystallizing ammonium dihydrogen phosphate out of said aqueous solution after said heat-treating.

4,269,815

METHOD OF EXCHANGING SODIUM ZEOLITE

John Lim, Anaheim; Warren Huang, San Gabriel, and Michael Brady, Studio City, all of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Filed May 23, 1980, Ser. No. 152,704
Int. Cl.[3] C01B *33/28*
U.S. Cl. 423—328 **6 Claims**

1. A process of exchanging a sodium Y which comprises forming a mixture of sodium Y and a water solution of a salt of a cation chosen from the group consisting of monovalent cation other than an alkali metal cation and a polyvalent cation, heating said mixture under autogenous pressure to a selected temperature in the range of about 300° F., and substantially less than 500° F., to reduce the sodium content of the zeolite to the range of about 4% to about 6% (expressed as the equivalent Na_2O) on a volatile free basis, quenching the mixture of exchanged Y and salt solution by adding water at a substantially lower temperature in amounts to reduce the temperature to less than the boiling point, and separating the exchanged Y zeolite and re-exchanging the exchanged zeolite by mixing the separated zeolite with a water solution of a salt of a cation chosen from the above group at a temperature in the range of about 300° F. to substantially less than 500° F., and separating said exchanged Y.

4,269,816
PREPARATION OF ANHYDROUS MAGNESIUM CHLORIDE

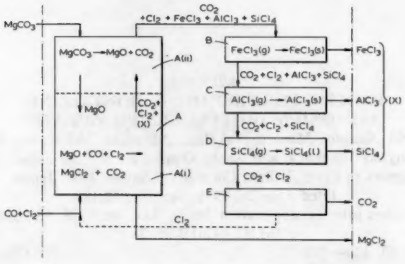
Charles E. E. Shackleton, deceased, late of London, England; By Edward A. B. Shackleton, executor, Lymington, England; Anthony J. Wickens, Rudgwick, England, and John H. W. Turner, via Stockport, England, assignors to Mineral Process Licensing Corp. BV, The Hague, Netherlands

Filed Jul. 27, 1979, Ser. No. 61,416

Claims priority, application United Kingdom, Jul. 27, 1978, 31427/78

Int. Cl.³ C01F *5/34*

U.S. Cl. 423—498 **13 Claims**



1. A process for the preparation of anhydrous magnesium chloride, the process comprising adding magnesium carbonate pieces to a reactor vessel and heating the pieces to a temperature above about the melting point of magnesium chloride and below about 1200° C. to form a heated packed bed comprising the heated pieces; reacting the heated pieces in the packed bed with gaseous chlorine in the presence of gaseous carbon monoxide; withdrawing carbon dioxide from above the packed bed and withdrawing molten anhydrous magnesium chloride from below the packed bed.

8. A continuous process for the preparation of anhydrous magnesium chloride, the process comprising preheating magnesium carbonate ore pieces and feeding such pieces into a packed bed reactor comprising heated magnesium carbonate ore; passing carbon monoxide and chlorine gas upwardly through the packed bed, the packed bed being maintained at a temperature in the range above about the melting point of magnesium chloride and below about 1200° C.; continuously removing molten magnesium chloride from beneath the packed bed; continuously removing residual solids from the lower portion of the packed bed while removing a gas from above the packed bed, the gas comprising carbon dioxide; continuously passing the carbon dioxide through a preheating zone while simultaneously continuously passing magnesium carbonate ore pieces through the preheating zone to form preheated and decomposed magnesium carbonate ore pieces and removing cooled carbon dioxide.

4,269,817
PRODUCTION OF CHLORINE FROM CHLORIDE SALTS

Charles A. Rohrmann, Kennewick, Wash., assignor to Battelle Memorial Institute, Richland, Wash.

Filed Jul. 27, 1979, Ser. No. 61,406

The portion of the term of this patent subsequent to Aug. 15, 1995, has been disclaimed.

Int. Cl.³ C01B *7/04*

U.S. Cl. 423—502 **6 Claims**

1. A process for producing elemental chlorine from a chloride salt comprising:

reacting, in a first zone, a chloride salt with sulfuric acid at an elevated temperature sufficient to produce hydrogen chloride gas;

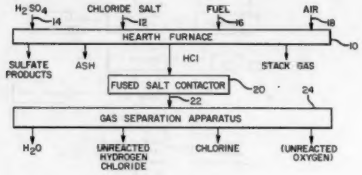
recovering the evolved hydrogen chloride; and

contacting, in a second zone,

a. the hydrogen chloride,

b. a molten salt mixture, and

c. a non-gaseous oxygen compound capable of reacting with said hydrogen chloride to produce elemental chlorine and water,



said contacting occurring in the substantial absence of an oxygen-bearing gas and at an elevated temperature sufficient to sustain a reaction between said oxygen compound and said hydrogen chloride to produce a gaseous effluent stream which contains steam and chlorine and which is substantially free of gaseous oxygen.

4,269,818
METHOD OF PRODUCING HYDROGEN

Masahiro Suzuki, 423, Yasaka, Kakegawa, Shizuoka, Japan

Filed Nov. 13, 1979, Ser. No. 93,660

Claims priority, application Japan, Nov. 13, 1978, 53-139632

Int. Cl.³ C01B *1/07*

U.S. Cl. 423—657 **4 Claims**

1. A method for producing hydrogen by the reaction between magnesium and water, which comprises the steps of:

immersing magnesium in an aqueous electrolytic solution containing at least one compound of at least one metal selected from the group consisting of nickel, chromium, manganese, iron and platinum, for a short period of time and without applying an external electroplating current, whereby to deposit said metal on the surface of said magnesium and thereby activate said surface so that said magnesium will rapidly react with water over an extended period of time to generate a large volume of hydrogen; and then immersing the activated magnesium in sea water or an aqueous solution of a salt selected from the group consisting of NaCl, KCl, Na_2SO_4 and K_2SO_4 and thereby generating hydrogen.

4,269,819
2,4,6-TRIIODOBENZONITRILE DERIVATIVES AND X-RAY CONTRAST MEDIA COMPRISING THEM

Heinz Gries, Berlin, Fed. Rep. of Germany, assignor to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

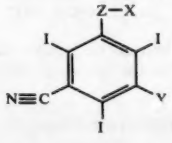
Filed Jul. 12, 1979, Ser. No. 57,243

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1978, 2831496; Jan. 19, 1979, 2902456

Int. Cl.³ A61K *49/04*; C07C *121/52*

U.S. Cl. 424—5 **20 Claims**

1. A compound of the formula



wherein Z is a direct bond or alkylene or alkenylene of up to 7 carbon atoms; X is —COOH or

wherein R_1 is a hydrogen atom or alkyl or hydroxy alkyl of up to 4 carbon atoms or a corresponding hydroxy alkyl group, and R_2 is the acyl radical of a hydrocarbon carboxylic acid of 2 to 5 carbon atoms or of a corresponding hydroxy carboxylic acid, and Y is a hydrogen atom or —COOH; and the physiologically acceptable salts with bases, and the corresponding esters and acid amides of the above compounds wherein at least one of X and Y is (a) of the formula —CO—OR wherein R is hydrocarbon of 1–4 carbon atoms or a corresponding hydrocarbon group substituted by one or more hydroxy groups, or (b) of the formula —CO—NR_3—R_4 wherein R_3 and R_4 each is a hydrogen atom or alkyl of 1–4 carbon atoms or corresponding alkyl substituted by 1–3 hydroxy groups, or (c) of the formula —CO—NH—R_5 wherein R_5 is methyl or ethyl.

19. An X-ray contrast agent adapted for oral or intravenous administration comprising a radiopaque amount per unit dosage of a compound of claim **1**, in admixture with a pharmaceutically acceptable carrier.

4,269,820

SAFEGUARDED TOXIC CHEMICAL COMPOSITIONS CONTAINING EFFECTIVE EMESIS-INDUCING S-TRIAZOLO-[1,5-α]PYRIMIDINE DERIVATIVES

George E. Davies, Wilmslow, and David M. Foulkes, Henly-on-Thames, both of England, assignors to Imperial Chemical Industries Limited, London, England

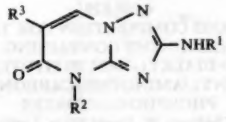
Continuation of Ser. No. 873,497, Jan. 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 830,765, Sep. 6, 1977, Pat. No. 4,160,017, which is a continuation of Ser. No. 716,801, Aug. 23, 1976, Pat. No. 4,046,552. This application Dec. 18, 1979, Ser. No. 104,758

Claims priority, application United Kingdom, Feb. 11, 1977, 5708/77; Apr. 29, 1977, 18008/77

Int. Cl.[3] **A61K** *7/047, 7/08, 7/15, 7/46*

U.S. Cl. 424—10 **8 Claims**

1. An emetic composition comprising a toxic amount of a toxic chemical substance which is other than a herbicidal bipyridylium quaternary salt, which is not intended for oral ingestion but when so orally ingested passes into the blood through the stomach and digestive tract and for which treatment by induction of emesis is medically advisable and an emetically effective amount of 0.01 to 5 parts by weight per 100 parts of the composition of an emetically active s-triazolo-[1,5-α]-pyrimidine derivative of the formula



wherein R^1 is hydrogen, a C_{1-4} alkyl radical, or a $COOC_2H_5$ radical; R^2 is a C_{1-4} alkyl radical or an allyl radical, and R^3 is a C_{1-4} alkyl radical, or a pharmaceutically acceptable emetically active addition salt thereof, the ratio of emetic to toxic chemical being such as to induce emesis when the composition is orally ingested.

4,269,821

BIOLOGICAL MATERIALS

Jörg Kreuter, 25 Münstergasse, CH-8001 Zurich, and Peter P. Speiser, 26 Wassbergstrasse, CH-8127 Forch, both of Switzerland, assignors to Jörg Kreuter and Peter Paul Speiser, both of Basel, Switzerland

Division of Ser. No. 931,680, Aug. 7, 1978, Pat. No. 4,225,581, which is a continuation of Ser. No. 862,213, Dec. 19, 1977, abandoned, which is a continuation of Ser. No. 666,611, Mar. 15, 1976, abandoned. This application May 2, 1980, Ser. No. 146,018

Claims priority, application Switzerland, Mar. 20, 1975, 3573/75; May 13, 1975, 6125/75

Int. Cl.[3] **A61K** *37/26, 9/14, 9/52, 9/58*

U.S. Cl. 424—19 **2 Claims**

1. Submicroscopic particles of a polymerized styrene or acrylic monomer on which is absorbed insulin, in suspension or colloidal solution in a sterile aqueous medium, wherein the submicroscopic particles have a particle size of from 50 to 500 nm diameters, whereby the submicroscopic particles are formed by suspending the polymeric particles in a liquid medium containing the insulin.

4,269,822

ANTISEPTIC DENTIFRICE

Michael A. Pellico, Los Angeles, and Robert E. Montgomery, West Los Angeles, both of Calif., assignors to Laclede Professional Products, Inc., Brooklyn, N.Y.

Continuation-in-part of Ser. No. 59,243, Jul. 20, 1979, abandoned. This application Aug. 29, 1980, Ser. No. 182,384

Int. Cl.[3] **A61K** *7/22, 7/28, 37/50, 31/195*

U.S. Cl. 424—50 **8 Claims**

1. An antiseptic dentifrice containing from about 0.01 to about 0.5 wt.% of an oxidizable amino acid substrate and from about 50 to about 1,000 International Units of an oxidoreductase enzyme specific to said substrate for producing ammonia and hydrogen peroxide upon oral applicaton of said dentifrice, said dentifrice being stabilized against the production of ammonia and hydrogen peroxide prior to the oral application thereof by incorporating into the dentifrice a non-aqueous fluid carrier in an amount from about 30 to about 60 wt.% and limiting any water present in the dentifrice to an amount not more than about 10 wt.%.

4,269,823

PERIODONTAL DENTAL PREPARATION

Eric Baines, Flixton, and Kenneth Harvey, Wilmslow, both of England, assignors to Colgate-Palmolive Co., New York, N.Y.

Filed Apr. 24, 1980, Ser. No. 143,068

Claims priority, application United Kingdom, May 15, 1979, 16874/79

Int. Cl.[3] **A61K** *7/18*

U.S. Cl. 424—52 **7 Claims**

1. A periodontal dental preparation consisting essentially of about 0.01–5% by weight of folic acid, a dentally acceptable water-insoluble polishing agent which is principally sodium aluminosilicate, hydrated alumina, calcium carbonate, insoluble sodium metaphosphate, or a mixture thereof which polishing agent reduces the soluble folic acid present in the preparation and a fluorine-containing agent which increases retention of soluble folic acid in said preparation, the fluorine-containing agent being an alkali metal fluoride, an alkali metal monofluorophosphate, or a mixture thereof.

4,269,824

THIXOTROPIC HAIR CONDITIONER COMPOSITION

Arturo A. Villamarin, Mine Hill, and Mabel A. S. de Gomez, Passaic, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 20, 1979, Ser. No. 50,358

Int. Cl.[3] **A61K** *7/06*

U.S. Cl. 424—70 **5 Claims**

1. An aqueous hair conditioner composition consisting es-

sentially of (1) from about 0.5 to 4.5 percent by weight of a dimethyl di(hydrogenated tallow) ammonium salt, (2) from about 0.5 to 2.0 percent by weight of a quaternized hydrolyzed collagen protein in which 90 percent of the protein amino groups have been substituted with a quaternary of the stearyl trimethyl ammonium chloride type and having a molecular weight of about 12,500, (3) from about 0.1 to 0.5 percent by weight of a cationic quaternized polymer of hydroxyethyl cellulose and (4) from about 1.3 to 1.7 percent by weight, based on the weight of the composition of a mixture of long chain fatty alcohols comprising at least 90 percent by weight of said mixture of C_{16} and C_{18} alcohols in a ratio of about 1:2, respectively and the balance water.

4,269,825

NEW GLYCOPROTEIN AND PROCESS FOR ISOLATING IT

Hans Bohn, Marburg, and Wilhelm Winckler, Wenkbach, both of Fed. Rep. of Germany, assignors to Behringwerke AG, Marburg, Fed. Rep. of Germany

Continuation of Ser. No. 915,261, Jun. 13, 1978, abandoned. This application Dec. 19, 1979, Ser. No. 105,416

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1977, 2726886

Int. Cl.[3] **A61K** *39/00;* **C07G** *7/00*

U.S. Cl. 424—85 **3 Claims**

1. An isolated, enriched glycoprotein obtainable by fractionating human blood serum or an aqueous extract of human placenta, said glycoprotein having:

(a) a protein content of 75±6%;

(b) a carbohydrate content of 24.6±5.2%, consisting of 8.9±2% of hexoses, 7.1±1.5% of N-acetylated hexoseamine, 0.2±0.2% of fucose, and 8.4±1.5% of N-acetylated neuraminic acid;

(c) a sedimentation coefficient S_{20w} of 2.5±0.3 S;

(d) a molecular weight of 35,000±5,000, determined in the ultracentrifuge;

(e) an iso-electric point of pH 3.4±0.4;

(f) an extinction coefficient $E_{1\ cm}^{1\%}$ (280 nm) of 1.9±0.3;

(g) an electrophoretic mobility in the range between the α_1-and α_2-globulins:

(h) a specific immunologic reaction with an antibody directed specifically against the glycoprotein.

3. An antiserum against the glycoprotein of claim 1.

4,269,826

PHYSIOLOGICAL PREPARATION CONTAINING LOADED CELLS IN SUSPENSION AND A MAGNETIC AGENT FOR LOCAL CONCENTRATION THEREOF IN A LIVING BODY

Ulrich Zimmermann, Jülich, and Günter Pilwat, Niederzier, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung, Jülich, Fed. Rep. of Germany

Filed Dec. 12, 1977, Ser. No. 859,563

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1976, 2656317

Int. Cl.[3] **A61K** *35/14, 37/48, 43/00*

U.S. Cl. 424—101 **14 Claims**

5. A suspension of loaded cells in a physiological solution in which said loaded cells are animal cells selected from the group consisting of blood cells and liver cells and are loaded with at least two materials extraneous to the original cell content, said material including a first material which is an agent selected from the group consisting of tumor-treating agents, medicaments and radionuclides and a second material which is a ferrimagnetic, ferromagnetic or paramagnetic compound, containing combined oxygen as well as at least one metal, in the form of particles having a diameter in the range between 1 and 20 nm coated with a silicone film and present in said loaded cells in sufficient quantity to enable said loaded cells to be gathered and held at a predetermined position in a physiological solution by the application of a magnetic field by means external to said physiological solution.

4,269,827

PROCESS AND COMPOSITION FOR REDUCING BLOOD PRESSURE

James A. Burton, Amesbury, and Edgar Haber, Weston, both of Mass., assignors to The Massachusetts General Hospital, Boston, Mass.

Filed Jun. 23, 1980, Ser. No. 162,082

Int. Cl.[3] **A61K** *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **5 Claims**

1. A blood pressure reducing composition which inhibits renin in vivo having the peptide structure:

Z-His-Pro-Phe-His-X-X-Val-Tyr-Y

wherein the Xs are the same or different and are selected from the group consisting of phenylalanyl, tyrosyl and a chlorinated phenylalanyl, Y is a charged amino acid residue selected from the group consisting of lysyl, arginyl, aspartyl and glutamyl and Z is selected from the group consisting of prolyl and polyprolyl having up to 5 prolyl residues.

4,269,828

INDOLE ANTI-INFLAMMATORY COMPOSITION

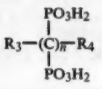
Lawrence Flora, Hamilton, and Marion D. Francis, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 782,144, Mar. 28, 1977, abandoned. This application Jul. 13, 1978, Ser. No. 924,477

Int. Cl.[3] **A61U** *31/40, 31/66*

U.S. Cl. 424—204 **10 Claims**

1. A method for treating or preventing pain and inflammation in animal tissues, comprising administering to an animal in need of such treatment from about 50 nilligrams to about 6000 milligrams per day of an indole-based anti-inflammatory compound selected from indomethacin and pharmaceutically acceptable salts and esters thereof and from about 200 milligrams to about 2000 milligrams per day of an organophosphonate compound selected from the group consisting of geminal organophosphonates of the formula



or pharmaceutically acceptable salts thereof, wherein n is an integer from 1 to about 10; R_3 is selected from the group consisting of H, C_1–C_{20} alkyl or cycloalkyl, C_2–C_{20} alkenyl, aryl, phenylethyl, benzyl, halogen, amino, substituted amino, —CH_2COOH, —$C_2PO_3H_2$, —$CH(PO_3H_2)(OH)$ or —$CH_2CH(PO_3H_2)_2$; and R_4 is selected from the group consisting of H, lower alkyl, amino, benzyl, halogen, —OH, —CH_2COOH, —$CH_2PO_3H_2$, or —$CH_2CH_2PO_3H_2$.

4,269,829

METHOD AND COMPOSITION FOR TREATING HELMINTHS CONTAINING O,O-DIALKYL-N-(SUBSTITUTED PHENYL)AMINOTHIOCARBONYL PHOSPHORAMIDATES

Michael Seidel, Chalfont; W. David Weir, Levittown, and Martha H. Wolfersberger, Perkasie, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jun. 18, 1979, Ser. No. 49,849

Int. Cl.[3] **A61K** *31/66;* **C07F** *9/24*

U.S. Cl. 424—211 **3 Claims**

1. A compound named O,O-diethyl-N-(2-styrylphenyl)-aminothiocarbonyl phosphoramidate.

2. A method for treating helminths which comprises the administration of an effective amount of the compound of claim 1.

4,269,830

COMPOSITIONS AND METHODS FOR THE TREATMENT OF CHRONIC TRYPANOSOMIASIS INFECTIONS

Francis W. Jennings, Glasgow, Scotland, assignor to Merck & Co., Inc., Rahway, N.J.

Filed May 17, 1979, Ser. No. 39,706

Int. Cl.³ A61K *31/655, 31/42*

U.S. Cl. 424—226 **3 Claims**

1. A composition useful for treating trypanosomiasis in humans and animals caused by *Trypanosoma brucei* TREU 667/1 which comprises 40 mg of diminozene aceturate and 80 'mg of 3'-(1-methyl-5-nitroimidazole-2-yl)-4,5'-hexamethylene-Δ^2-isoxazoline.

4,269,831

TOPICAL DERMATOLOGICAL METHOD OF USE OF AN ANDROSTENOPYRAZOLE

Richard A. Ferrari, Bethlehem, and Arthur L. Beyler, North Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed May 9, 1979, Ser. No. 37,439

Int. Cl.³ A61K *31/58*

U.S. Cl. 424—241 **1 Claim**

1. The method of treating dermatological conditions associated with androgenic stimulatory influence including acne and hirsutism which comprises applying to the affected skin area a composition comprising an antiandrogenically and glucocorticoidally effective amount equivalent to at least 5 micrograms per flank organ of a hamster of 17β-hydroxy-6α-methyl-17α-propynyl-4-androsteno[3,2-c]pyrazole in a pharmaceutical formulation suitable for topical application.

4,269,832

METHOD OF TREATING ARTHRITIC DISEASE

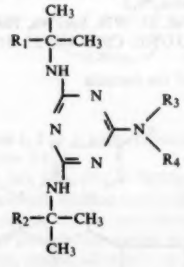
Andrew S. Tomcufcik, Old Tappan, N.J., and Adolph E. Sloboda, New City, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 17,797, Mar. 5, 1979, abandoned, which is a continuation-in-part of Ser. No. 895,572, Apr. 12, 1978, abandoned. This application Nov. 19, 1979, Ser. No. 95,813

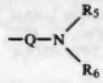
Int. Cl.³ A61U *27/00, 31/33, 31/53, 31/54*

U.S. Cl. 424—244 **3 Claims**

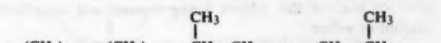
1. The method of inhibiting the progression of arthritis in a mammal which comprises administering to said mammal an effective amount of a compound selected from the group consisting of those of the formula:



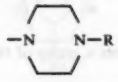
wherein R_1 and R_2 are each individually selected from the group consisting of methyl, tert.-butyl, tert.-amyl, neopentyl and 3,3-dimethylbutyl; R_3 is hydrogen or alkyl having up to 4 carbon atoms; R_4 is selected from the group consisting of tert.-butyl, 1,1,2,2-tetramethylpropyl, 1,1,2,2-tetramethylbutyl, 1,1,3,3-tetramethylbutyl, 1,1,4,4-tetramethylamyl, 2-(2-pyridyl)-ethyl and a moiety of the formula:



wherein Q is a moiety of the formulae:



R_5 and R_6 are each alkyl having up to 4 carbon atoms and R_5 and R_6 taken together with their associated Nitrogen is pyrrolidino, piperidino, morpholino or thiomorpholine; and R_3 and R_4 taken together with their associated Nitrogen is selected from the group consisting of pyrrolidino, piperidino, hexamethyleneimino, heptamethyleneimino and a moiety of the formula:



wherein R is hydrogen, alkyl having up to 4 carbon atoms, phenyl, p-methoxyphenyl or carboalkoxy having up to 4 carbon atoms; and the non-toxic acid-addition and quaternary ammonium salts thereof.

4,269,833

HEXAHYDRO-1,4-OXAZEPINES, THEIR PREPARATION, AND DRUGS CONTAINING THESE COMPOUNDS

Hans J. Treiber, Bruehl; Dieter Lenke, Ludwigshafen, and Wolfgang Worstmann, Gruenstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

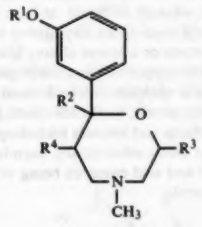
Filed Dec. 31, 1979, Ser. No. 108,370

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1979, 2901180

Int. Cl.³ C07D *313/04*

U.S. Cl. 424—244 **4 Claims**

1. A hexahydro-1,4-oxazepine of the general formula



I

where

R^1 is hydrogen, or alkyl or acyl each of 1 to 4 carbon atoms,

R^2 is alkyl of 1 to 4 carbon atoms and

R^3 and R^4 may be identical or different and each is hydrogen or methyl,

and its salts with physiologically acceptable acids.

4. The method of alleviating pain in a patient suffering therefrom which comprises administering an effective amount of a compound according to claim 1.

4,269,834

COPPER COMPLEXES OF ISOQUINAZOLINES

Wijbe T. Nauta, Rembrandtlaan 17, Nieuw Loosdrecht, Netherlands

Filed Jun. 19, 1978, Ser. No. 916,541

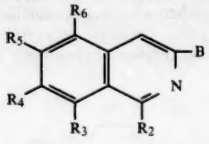
Claims priority, application United Kingdom, Jun. 17, 1977, 25539/77; Netherlands, Dec. 15, 1977, 7713938

Int. Cl.[3] **C07F** *1/08;* **C07D** *401/04, 403/04;* **A61K** *31/555*

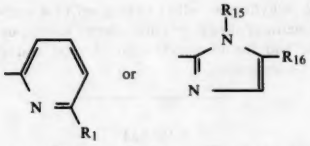
U.S. Cl. 424—245 **16 Claims**

1. A method for combatting mycoplasma-induced diseases in animals, including humans, and plants, comprising treating the animal or plant with a composition containing a carrier acceptable for use for the subject being treated and an effective amount of either

a complex of a copper salt, having an anion substantially harmless to the subject being treated with an organic compound of the formula



wherein B represents a group of the formula



Ia Ib

in which R_1 represents a hydrogen atom or a lower alkyl group, R_{15} represents a hydrogen atom or a lower alkyl or lower alkenyl and R_{16} represents a hydrogen atom or a nitro group,

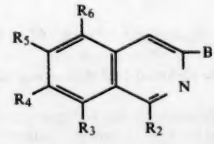
R_2 represents a hydrogen or halogen atom or a lower alkyl, phenyl, amino, lower alkylamino or di(lower alkyl)-amino group, with the proviso that R_2 is hydrogen, halogen, methyl, amino, lower alkylamino or di(lower alkyl)amino when B is a group of formula Ib,

R_3 and R_6 are the same or different and each represents a hydrogen or halogen atom or a lower alkyl group,

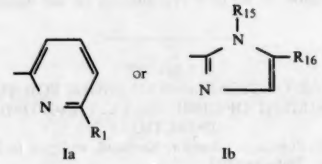
R_4 and R_5 are the same or different and each represents a hydrogen or halogen atom, an alkyl group having at most twelve carbon atoms or a lower alkoxy group, or

with a mixture of the copper salt and the organic compound from which such a complex can be formed in situ.

2. A complex of copper salt, useful for treating mycoplasma induced diseases in plants and animals including humans, said copper salt having an anion substantially harmless to the subject of said treatment and said complex being with an organic compound of the formula



wherein B represents a group of the formula



Ia Ib

in which R_1 represents a hydrogen atom or a lower alkyl group, R_{15} represents a hydrogen atom or a lower alkyl or lower alkenyl group and R_{16} represents a hydrogen atom or a nitro group,

R_2 represents a hydrogen or halogen atom or a lower alkyl, phenyl, amino, lower alkylamino or di(lower alkyl)-amino group, with the proviso that R_2 is hydrogen, halogen, methyl, amino, lower alkylamino or di(lower alkyl)amino when B is a group of formula Ib,

R_3 and R_6 are the same or different and each represents a hydrogen or halogen atom or a lower alkyl group,

R_4 and R_5 are the same or different and each represents a hydrogen or halogen atom, an alkyl group having at most twelve carbon atoms or a lower alkoxy group.

12. An animal feed composition which contains at least one copper complex as defined in claim **2** in association with an animal feed component selected from ground grains, grain by-products, animal protein, vitamins, bone meal, limestone and other inert inorganic compounds.

4,269,835

NASAL COMPOSITION FOR RELIEVING NASAL DISTRESS

Barry J. Whittle, 8770 Sand Point Way NE., Seattle, Wash. 98115

Filed Dec. 13, 1979, Ser. No. 103,208

Int. Cl.[3] **A61K** *31/54, 31/355*

U.S. Cl. 424—247 **8 Claims**

1. A composition for topical application to the nasal passageways which does not employ a vasoconstrictor compound as a decongestant, consisting essentially of a buffered, isotonic aqueous solution containing 0.25 to 0.8 percent by weight of an antihistamine and a saturated amount of one or more of the natural or synthetic isomers of tocopherol or the esters of one of the isomers of tocopherol.

4,269,836

4H-PYRAZOLO[4',3':5,6]PYRIDO[4,3-D][1,2,4]TRIAZOLO[3,2-B]-PYRIMIDIN-5(8H)ONE AND DERIVATIVES THEREOF

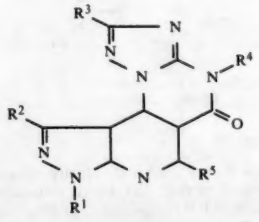
Theodor Denzel, Regensburg, and Hans Hoehn, Tegernheim, both of Fed. Rep. of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jul. 13, 1976, Ser. No. 704,855

Int. Cl.[3] **A61K** *31/505;* **C07D** *487/22, 265/30, 279/12*

U.S. Cl. 424—246 **18 Claims**

1. A compound of the formula



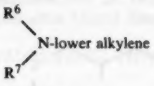
wherein

R^1 is hydrogen, lower alkyl, phenyl, phenyl-lower alkylene, R_8-benzoyl;

R^2 and R^5 each is hydrogen or lower alkyl;

R^3 is hydrogen, lower alkyl, phenyl, lower alkylthio or lower alkylsulfinyl;

R^4 is hydrogen, lower alkyl, phenyl-lower alkylene, R_8-benzoyl, lower alkanoyl, lower alkoxy-lower alkylene, lower alkylthio-lower alkylene, R_8-phenyl, amino-lower alkylene or



wherein R^6 and R^7 each is lower alkyl or together join to complete the heterocycle piperidine, morpholine, thiamorpholine or piperazine;

R_8 is hydrogen, halogen, lower alkoxy or lower alkyl; said lower alkyl, lower alkylene, lower alkoxy and lower alkanoyl groups having up to seven carbon atoms.

18. A method for treating inflammation which comprises administering to a mammal suffering therefrom a composition comprising about 10 to 250 mg. of a compound of claim **1** and a physiologically acceptable carrier therefor.

4,269,837

HYPOGLYCEMIC GUANYLAMIDINES, COMPOSITIONS AND USE

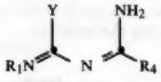
David S. Watt, East Lyme, Conn., and Jeffrey L. Ives, King of Prussia, Pa., assignors to Pfizer Inc., New York, N.Y.

Filed Feb. 19, 1980, Ser. No. 122,155

Int. Cl.[3] **A61K** *31/54, 31/155;* **C07D** *295/12;* **C07C** *129/12*

U.S. Cl. 424—246 **46 Claims**

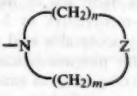
1. A compound of the formula



and the pharmaceutically acceptable acid addition salts thereof,

wherein R_1 and R_4 are each selected from phenyl; phenyl monosubstituted with chloro, bromo, fluoro, alkyl of 1 to 3 carbon atoms or alkoxy of 1 to 3 carbon atoms; benzyl; naphthyl, pyridyl, quinolyl; furyl, thienyl and pyrimidinyl;

and Y is



or $—NR_2R_3$,

wherein

n and m are each 1, 2 or 3, with the proviso that the sum of n and m is from 3 to 5;

Z is CH_2, O, S, SO, SO_2, NH or NCH_3;

and R_2 and R_3 are each selected from n-alkyl of 1 to 4 carbon atoms; alkoxyethyl, wherein said alkoxy group is of 1 to 3 carbon atoms; phenyl; and phenyl monosubstituted with chloro, bromo, fluoro, alkyl of 1 to 3 carbon atoms or alkoxy of 1 to 3 carbon atoms.

41. A pharmaceutical composition comprising a pharmaceutically acceptable carrier and an effective blood-sugar lowering amount of a compound of claim **1**.

4,269,838

CARBAMYL PIPERAZINE DERIVATIVES

Shingo Matsumura, Kyoto; Hiroshi Enomoto, Nagaokakyo; Yoshiaki Aoyagi, Kyoto, and Haruo Tanaka, Hikone, all of Japan, assignors to Nippon Shinyaku Co. Ltd., Japan

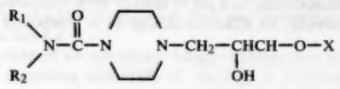
Filed Oct. 23, 1979, Ser. No. 87,363

Claims priority, application Japan, Oct. 23, 1978, 53-130922

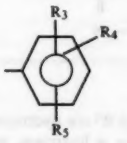
Int. Cl.[3] **C07D** *295/20, 31/495*

U.S. Cl. 424—250 **46 Claims**

1. A compound selected from the group consisting of a carbamylpiperazine of the formula:



and the pharmaceutically acceptable acid addition salts thereof wherein each of R_1 and R_2, independently of the other, is hydrogen or lower alkyl, and X is naphthyl or



wherein each of R_3, R_4 and R_5, independently of the others, is selected from the group consisting of hydrogen, hydroxy, halo, lower alkyl, lower alkoxy, lower alkanamido and benzyloxy.

46. A pharmaceutical composition comprising an amount of a compound according to claim **1** sufficient to effect a β-adrenergic blocking response in combination with a pharmaceutically acceptable carrier.

4,269,839

ALKYLTHIO-ADENINES USED AS BRONCHODILATORS

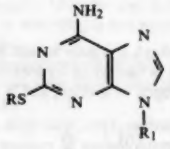
Takayuki Naito, Kawasaki; Susumu Nakagawa, Tokyo; Tetsuro Yamasaki; Taka-aki Okita, both of Ichikawa, and Haruhiro Yamashita, Tokyo, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Filed Sep. 13, 1979, Ser. No. 74,848

Int. Cl.[3] **A61K** *31/52*

U.S. Cl. 424—253 **3 Claims**

1. A bronchodilating process which comprises systemic administration to a mammal in need thereof an effective dose of from about 0.1 to 20 mg./kg. body weight of a compound of Formula I



(I)

wherein

R is lower alkyl of 1 to 4 carbon atoms inclusive;

R_1 is cyclohexyl or 2-cyclohexenyl;

or a pharmaceutically acceptable acid addition salt thereof.

4,269,840

CERTAIN 7-(β-PHENYL-β-HYDROXYETHYLAMINOPROPYL)-THEOPHYLLINES AS LIPOLYSIS PROMOTERS

Hugh H. Keasling, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

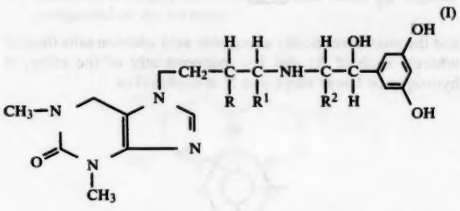
Filed Jan. 14, 1980, Ser. No. 111,736

The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.

Int. Cl.³ A61K *31/52*

U.S. Cl. 424—253 **1 Claim**

1. A method of promoting lipolysis in swine which comprises administering, to a pig in need of such treatment, orally or parenterally, an effective dosage of a compound of the formula:



(I)

wherein both of R and R^1 are hydrogen, or one is methyl or hydroxyl and the other is hydrogen, and R^2 is hydrogen or methyl, and their physiologically acceptable acid addition salts.

4,269,841

CERTAIN 7-(PHENETHYLAMINOALKYL)THEOPHYLLINE DERIVATIVES AS LIPOLYSIS PROMOTERS

Hugh H. Keasling, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

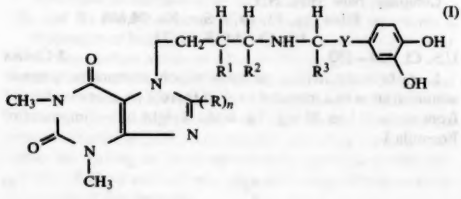
Filed Jan. 14, 1980, Ser. No. 111,737

The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.

Int. Cl.³ A61K *31/52*

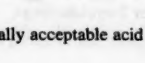
U.S. Cl. 424—253 **1 Claim**

1. A method of promoting lipolysis in swine which comprises administering, to a pig in need of such treatment, orally or parenterally, an effective dosage of a compound of the formula:



(I)

wherein R is 1-piperidinyl, n is zero or one, both of R^1 and R^2 are hydrogen, or one is methyl or hydroxyl and the other is hydrogen, R^3 is hydrogen or methyl, and Y is



and their physiologically acceptable acid addition salts.

4,269,842

METHOD FOR TREATING RHINOVIRAL COMPLAINTS

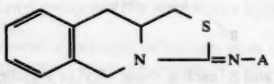
Daniel Farge, Thiais; Alain Jossin, St-Cloud; Gerard Ponsinet, Sucy-en-Brie, and Daniel Reisdorf, Thiais, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Dec. 5, 1979, Ser. No. 100,524

Int. Cl.³ A61K *31/47*

U.S. Cl. 424—258 **6 Claims**

1. A method for treating rhinoviral complaints, which comprises administering to a mammal in need of said treatment an effective anti-rhinoviral amount of a compound of the formula:



(I)

in the S form, in which A is pyrid-3-yl, 2-chloropyrid-3-yl, 2-fluoro-pyrid-3-yl, 2-methoxy-pyrid-3-yl, isoquinol-5-yl, or 3-methylisoquinol-5-yl or a pharmaceutically acceptable salt thereof.

4,269,843

N-SEC-ALKYL ANALOGS OF NORCODEINE AND NORMORPHINE AND ANALGESIC COMPOSITIONS AND METHODS EMPLOYING THE NORMORPHINE DERIVATIVES

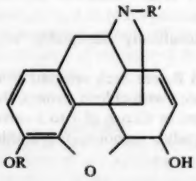
Joseph I. De Graw, Sunnyvale; John A. Lawson, Monte Vista; Howard L. Johnson, Sunnyvale, and Gilda H. Loew, Atherton, all of Calif., assignors to SRI International, Menlo Park and The Board of Trustees of Leland Stanford Jr. University, Stanford, both of, Calif.

Division of Ser. No. 909,257, May 24, 1978, Pat. No. 4,218,454, which is a continuation-in-part of Ser. No. 813,796, Jul. 8, 1977, abandoned. This application Jul. 8, 1980, Ser. No. 166,948

Int. Cl.³ A61K *31/485*; C07D *489/02*

U.S. Cl. 424—260 **9 Claims**

1. Compounds having the structure



wherein R represents hydrogen or methyl and wherein R' represents 2-butyl, α-methylallyl, or 3-pentyl, together with their pharmaceutically acceptable acid addition salts.

8. A dosage unit for pharmaceutical composition for the amelioration of pain comprising an amount within a range of from about 2 to 1750 mg per dosage unit, therapeutically effective to ameliorate pain, of at least one compound selected from the group consisting of N-2-butylnormorphine, N-α-methylallylnormorphine, N-3-pentylnormorphine and their pharmaceutically acceptable acid addition salts, together with a pharmaceutically acceptable nontoxic carrier or diluent therefor.

9. A method having little addiction potential for ameliorating pain in a warm-blooded animal, said method comprising administering to said animal an amount, effective to ameliorate the pain, of at least one compound selected from the group consisting of N-2-butylnormorphine, N-α-methylallylnormorphine and N-3-pentylnormorphine, together with the salts thereof, said compounds having good antagonist characteristics.

4,269,844

ALKOXYPYRIDYL N-CYANO OR N-CARBAMOYLGUANIDINO ALKANES, COMPOSITIONS CONTAINING SAME AND USES THEREOF

Graham J. Durant; Charon R. Ganellin, both of Welwyn Garden City, and George S. Sach, Welwyn, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

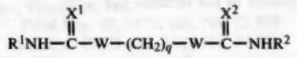
Division of Ser. No. 948,617, Oct. 4, 1978, Pat. No. 4,210,652, which is a division of Ser. No. 816,420, Jul. 18, 1977, Pat. No. 4,139,624. This application Nov. 26, 1979, Ser. No. 97,297

Claims priority, application United Kingdom, Jul. 28, 1976, 31392/76

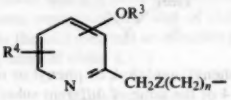
Int. Cl.[3] **C07D** *213/56, 213/57, 213/58;* **A61K** *31/44*

U.S. Cl. 424—263 **10 Claims**

1. A compound of the formula



wherein X^1 and X^2, which may be the same or different, are each NY where Y is cyano or $CONH_2$; R′ is a grouping of the structure



wherein R^3 is lower alkyl or $—(CH_2)_pA$ where p is 2 to 4, and A is hydroxy, lower alkoxy or dimethylamino; R^4 is hydrogen, lower alkyl, lower alkoxy, amino, halogen, or methylamino; or $—OR^3$ and R^4 can together form a $—O(CH_2)_bO$-group attached to adjacent carbon atoms on the pyridine ring; where b is 1 to 4; Z is sulphur or methylene; n is 2 or 3; R^2 has the same scope as R′ or is a grouping of the structure:

$$Het—(CH_2)_{m'}Z'(CH_2)_{n'}—$$

wherein Het is a nitrogen containing 5 or 6 membered heterocyclic ring selected from the group consisting of imidazole, pyridine, thiazole, isothiazole, oxazole, isoxazole, pyrazole, triazole and thiadiazole which is optionally substituted by lower alkyl, hydroxy, halogen or amino; Z′ is sulphur or methylene; m′ is 0, 1 or 2; n′ is 2 or 3 and the sum of m′ and n′ is 3, 4; W is NH and q is an integer from 2 to 8 or a pharmaceutically acceptable acid addition salt thereof.

9. A method of inhibiting H-2 histamine receptors which comprises administering orally or parenterally to an animal in need thereof in an effective amount to inhibit said receptors a compound of claim 1.

4,269,845

TRIAZOLE AND IMIDAZOLE COMPOUNDS AND THEIR USE AS FUNGICIDES AND PLANT GROWTH REGULATING AGENTS

Paul A. Worthington, and Margaret C. Shephard, both of Maidenhead, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jan. 20, 1978, Ser. No. 901,125

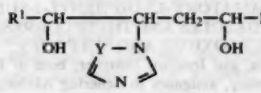
Claims priority, application United Kingdom, Jan. 20, 1977, 2304/77; Oct. 26, 1977, 44540/77

The portion of the term of this patent subsequent to Dec. 19, 1995, has been disclaimed.

Int. Cl.[3] **A01N** *43/50, 43/64;* **C07D** *233/60, 249/08*

U.S. Cl. 424—269 **12 Claims**

1. A compound of general formula (I):



wherein each of R^1 and R^2, which may be the same or different is C_{1-6} alkyl, halo (C_{1-6} alkyl) or phenyl optionally substituted with up to three substituents selected from the class consisting of halogen, nitro, C_{1-4} alkyl, and C_{1-4} alkoxy, and Y is =N— or =CH—; or an alkanoate ester, an alkyl, phenyl or benzyl ether, an acid addition salt or a copper, zinc, manganese or iron complex thereof.

9. A method of combating fungal diseases in a plant, the method consisting essentially of the step of applying to the plant, to seed of the plant or to the locus of the plant or seed, a fungicidally effective amount of a compound, alkanoate ester, alkyl, phenyl or benzyl ether, acid addition salt or copper, zinc, manganese or iron complex as claimed in claim 1.

4,269,846

HETEROCYCLIC COMPOUNDS USEFUL AS ANTI-ALLERGY AGENTS

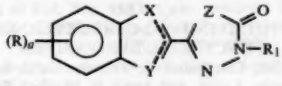
Fu C. Huang, Boonton, N.J., and John H. Musser, Hawthorne, N.Y., assignors to USV Pharmaceutical Corporation, Tuckahoe, N.Y.

Filed Oct. 29, 1979, Ser. No. 89,246

Int. Cl.[3] **A61K** *31/41;* **C07D** *271/10, 285/12, 249/02*

U.S. Cl. 424—269 **21 Claims**

1. An anti-allergic compound of the formula



wherein:

the dotted line indicates that the double bond may be in either position;

R is hydrogen, alkyl, alkenyl, alkoxy, alkenyloxy, aryloxy, aralkoxy, halogen, cyano, nitro, carboxy, hydroxy, formyl, carbalkoxy, hydroxyalkyl, amino, alkylamino, trifluoromethyl, mercapto, trifluoromethoxy, alkylthio, or aminoalkyl, wherein the number of carbon atoms in the alkyl and alkenyl moieties is up to 7 and in the aryl moieties is up to 10;

Y is N, N—R_2 or CR_2 wherein R_2 is hydrogen, alkyl or aryl and the number of carbon atoms is up to 7 in said alkyl moiety and is up to 10 in the aryl moiety, with the proviso that when Y is NH, $(R)_a$ is not hydrogen;

a is an integer from 1 to 4;

X and Z are independently O, S, NR_2 or CR_2 wherein R_2 is as defined above, with the proviso that when Y is NR_2, X is not CR_2; and

R_1 is hydrogen, alkyl, aryl, acyl, carbalkoxy, or carbaryloxy, wherein the number of carbon atoms in is up to 7 in the alkyl and aliphatic acyl groups and is up to 10 in the aryl and aromatic acyl groups; and

acid addition salts thereof.

4. A pharmaceutical composition comprising a compound as claimed in claim 1 in a pharmaceutically-acceptable excipient.

4,269,847

ANTIINFLAMMATORY-4,5-DIPHENYL-2-SUBSTITUTED-THIO-IMIDAZOLES AND THEIR CORRESPONDING SULFOXIDES AND SULFONES

Ulrich Niedballa, and Irmgard Böttcher, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

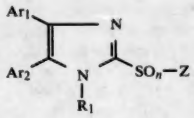
Filed May 22, 1979, Ser. No. 41,367

Claims priority, application Fed. Rep. of Germany, May 24, 1978, 2823197

Int. Cl.[3] A61K *31/415;* C07D *233/84*

U.S. Cl. 424—273 R 24 Claims

1. An imidazole derivative of the formula



wherein

Ar_1 and Ar_2 are each phenyl; phenyl substituted by halogen, C_{1-4} alkyl, C_{1-4} alkoxy or C_{2-6} dialkylamino; with the proviso that Ar_1 and Ar_2 are not both unsubstituted phenyl;

R_1 is hydrogen, C_{1-4} alkyl or C_{1-4} alkyl substituted by hydroxy, C_{1-4} alkoxy or C_{1-6} alkanoyloxy;

n is 0, 1 or 2; and

Z is a C_{2-6}-alkenyl residue substituted by one or two of hydroxy, C_{1-4} alkoxy, C_{2-8} alkylenedioxy, C_{1-6} alkanoyloxy or benzoyloxy, or by one alkoxycarbonyl group; or C_{1-6} alkyl substituted by two hydroxy or by one or two of C_{1-4} alkoxy; C_{2-8} alkylenedioxy; C_{1-6} alkanoyloxy or benzoyloxy;

and the salts thereof with physiologically acceptable acids.

24. A method of treating inflammation in a mammal which comprises administering an antiinflammatorily effective amount of a compound of claim 1.

4,269,848

5-SUBSTITUTED INDAN-2-CARBOXYLIC ACID AND FUNCTIONAL DERIVATIVES

Michel Bayssat, Charbonnieres; Francis Sautel, Lyons; Jean-Claude Depin, Lyons, and Annie B. Matibet, Lyons, all of France, assignors to Lipha, Lyonnaise Industrielle Pharmaceutique, Lyons, France

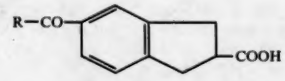
Continuation-in-part of Ser. No. 756,862, Jan. 4, 1977, abandoned. This application Jan. 27, 1978, Ser. No. 873,075

Claims priority, application France, Jan. 12, 1976, 76 00552

Int. Cl.[3] B29H *3/04*

U.S. Cl. 424—275 8 Claims

1. A 5-substituted indan-2-carboxylic acid, or functional derivative thereof, having the formula:



in which R is selected from the group consisting of furyl, alkylfurl, pyridyl, theinyl, and thienyl substituted by at least one of the substituents selected from the group consisting of halogen atoms and alkyl groups,

in the free form or a therapeutically acceptable salt, ester or amide thereof.

7. A therapeutic composition for combatting inflammation and pain comprising an anti-inflammatory or analgesic amount of a compound in accordance with claim 1 and a pharmaceutically acceptable excipient therefor.

4,269,849

FUNGICIDAL 3-(N-CYCLOALKYLCARBONYL-N-ARYLAMINO)-GAMMA-BUTYROLACTONES AND GAMMA-BUTYROTHIOLACTONES

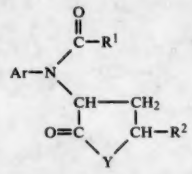
David C. K. Chan, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 13,856, Feb. 22, 1979, which is a continuation-in-part of Ser. No. 847,502, Nov. 1, 1977, abandoned, which is a continuation-in-part of Ser. No. 837,121, Sep. 29, 1977, Pat. No. 4,141,989, which is a continuation-in-part of Ser. No. 731,491, Oct. 12, 1976, Pat. No. 4,107,323, which is a continuation-in-part of Ser. No. 631,351, Nov. 12, 1978, Pat. No. 4,012,519, which is a continuation-in-part of Ser. No. 548,660, Feb. 10, 1975, Pat. No. 3,933,860. This application Dec. 12, 1979, Ser. No. 102,793

Int. Cl.[3] A01N *43/02*

U.S. Cl. 424—275 11 Claims

1. A compound of the formula



(I)

wherein Ar is phenyl, naphthyl, or phenyl or naphthyl substituted with 1 to 4 of the same of different substituents selected from fluoro, chloro, bromo, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms; R^1 is cycloalkyl of 3 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms substituted with 1 to 4 of the same or different substituents selected from alkyl of 1 to 4 carbon atoms, fluoro, chloro, bromo, hydroxy or alkoxy of 1 to 4 carbon atoms; and R^2 is hydrogen, chloro, bromo, alkyl of 1 to 6 carbon atoms, phenyl or phenyl substituted with 1 to 2 of the same or different substituents selected from fluoro, chloro, bromo and alkyl of 1 to 6 carbon atoms; and Y is S.

8. A method of the control of fungi which comprises contacting said fungi or their habitats with a fungicidally effective amount of a compound of the formula defined in claim 1.

11. A fungicidal composition comprising a biologically inert carrier and a fungicidally effective amount of a compound of the formula defined in claim 1.

4,269,850

ENTEROCHELIN COMPLEXES

Henry J. Rogers, Clophill, England, assignor to National Research Development Corporation, London, England

Filed May 2, 1979, Ser. No. 35,415

Claims priority, application United Kingdom, May 5, 1978, 18003/78

Int. Cl.[3] A61K *31/335;* C07D *323/00*

U.S. Cl. 424—279 10 Claims

1. A complex of enterochelin with indium.

2. A complex of enterochelin with scandium.

3. An antibacterial pharmaceutical composition, comprising: an antibacterially effective amount of a complex of enterochelin with indium or scandium.

10. A method of treating bacterial infections in a human or animal patient, which comprises: administering to such patient an antibacterially effective amount of a scandium or indium complex of enterochelin.

4,269,851
8-AMINOALKYL-4-ALKYLPSORALENS

Kurt D. Kaufman, Kalamazoo, Mich., assignor to Thomas C. Elder, Inc., Hamilton, Ind.

Filed Sep. 10, 1979, Ser. No. 73,907
Int. Cl.[3] C07D *493/04;* A61K *31/365*
U.S. Cl. 424—279 9 Claims

1. 4-loweralkyl-8-primaryaminoloweralkypsoralen.

7. The method of effecting photochemical sensitivity on the skin of a mammal comprising the step of orally or topically administering to the said mammal an effective photosensitizing dose of a compound of claim 1.

4,269,852
4'-SUBSTITUTED-4,5',8-TRIALKYLPSORALENS

Kurt D. Kaufman, Kalamazoo, Mich., assignor to Thomas C. Elder, Inc., Hamilton, Ind.

Filed Sep. 10, 1979, Ser. No. 73,909
Int. Cl.[3] C07D *493/04;* A61K *31/365*
U.S. Cl. 424—279 15 Claims

1. 4'-R-4,5',8-triloweralkylpsoralen, wherein the R substituent on the 4' carbon atom is selected from the group consisting of hydroxyloweralkoxyloweralkyl and N-(hydroxyloweralkyl)aminoloweralkyl.

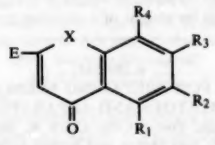
11. The method of effecting photochemical sensitivity on the skin of a mammal comprising the step of orally or topically administering to the said mammal an effective photosensitizing dose of a compound of claim 1.

4,269,853
COMPOSITION AND METHOD FOR TREATING SKIN MAST CELLS AND/OR DELAYED CELLULAR HYPERSENSITIVITY REACTIONS

Thomas S. C. Orr, Melton Mowbray, and Raymond W. Keogh, East Goscote, both of England, assignors to Fisons Limited, England

Division of Ser. No. 794,030, May 5, 1977, Pat. No. 6,160,844. This application Mar. 5, 1979, Ser. No. 17,422
Claims priority, application United Kingdom, May 21, 1976, 20986/76
Int. Cl.[3] A61K *31/35, 31/41*
U.S. Cl. 424—283 12 Claims

1. A pharmaceutical composition suitable for application to the skin for treatment of a condition in a mammal involving skin mast cells and/or delayed cellular hypersensitivity reaction, said composition comprising a pharmaceutical carrier acceptable on the skin of said mammal and, as active ingredient, an effective amount of a compound having the formula,



in which R_1 represents hydrogen or $—NR_5R_6$, in which R_5 and R_6, which may be the same or different, each represent hydrogen or alkyl C 1 to 6,

an adjacent pair of R_2, R_3 and R_4 form a $—(CH_2)_4—$ chain, and the remaining substituent R_2 or R_4 represents propyl,

E represents a 5-(1H)tetrazolyl- or a —COOH group, and

X represents oxygen,

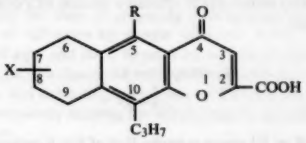
or a pharmaceutically acceptable salt, ester, or amide thereof.

4,269,854
6,7,8,9-TETRAHYDRO-4H-NAPHTHO-[2,3-B]PYRAN-2-CARBOXYLIC ACIDS

Dennis A. Smith, Loughborough, England, assignor to Fisons Limited, Suffolk, England

Filed Aug. 10, 1979, Ser. No. 65,542
Claims priority, application United Kingdom, Sep. 12, 1978, 36428/78
Int. Cl.[3] C07D *311/92;* A61K *31/35*
U.S. Cl. 424—283 10 Claims

1. A compound of formula I,



I

in which R is hydrogen, hydroxy, or alkoxy C 1 to 6, and

X is hydroxy, carbonyl oxygen or alkoxy C 1 to 6,

and pharmaceutically acceptable salts, esters and amides thereof.

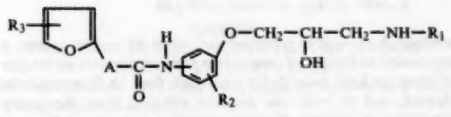
9. A method of treatment of a condition involving the combination of antibody and specific antigen or involving skin mast cells or a delayed hypersensitivity reaction, which comprises administration of an effective amount of a compound according to claim 1 to a patient suffering from such a condition.

4,269,855
(3-ALKYLAMINO-2-HYDROXYPROPOXY)-FURAN-2-CARBOXYLIC ACID ANILIDES AND PHYSIOLOGICALLY TOLERATED ACID ADDITION SALTS THEREOF AND MEDICAMENTS CONTAINING THEM

Joachim Uhlendorf, Erftstadt-Lechenich; Hans Betzing, Kerpen-Horrem; Hamied Gabbar, Erftstadt-Lechenich; Erich Graf, Kerpen-Horrem, and Ille-Stephanie Doppelfeld, Cologne, all of Fed. Rep. of Germany, assignors to A. Nattermann & Cie. GmbH, Cologne, Fed. Rep. of Germany

Filed Jun. 3, 1980, Ser. No. 155,953
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1979, 2923817
Int. Cl.[3] C07D *307/54, 307/73*
U.S. Cl. 424—285 5 Claims

1. (3-Alkylamino-2-hydroxypropoxy)-furan-2-carboxylic acid anilides of the formula:



wherein R_1 is selected from the group consisting of a straight or branched C_1 to C_5 alkyl group, cyclopropyl and cyclopentyl; R_2 is selected from the group consisting of hydrogen, halogen, methyl, methoxy, nitro and acetyl; R_3 is selected from the group consisting of hydrogen, halogen, and nitro; and A is selected from the group consisting of single bond, $—CH_2—$, and —CH=CH—; and physiologically tolerated acid addition salts thereof.

5. A method for the treatment or prophylaxis of disorders of the coronary vessels and cardiac arrhythmias which comprises administering to a subject an effective amount of a compound as claimed in claim 1.

4,269,856

MITE AND MITE OVICIDAL COMPOSITIONS

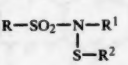
David C. K. Chan, San Francisco, and Arthur A. Whipp, Walnut Creek, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 912,166, Jun. 2, 1978, Pat. No. 4,208,348, which is a division of Ser. No. 760,042, Jan. 17, 1977, Pat. No. 4,107,332. This application Sep. 10, 1979, Ser. No. 74,358

Int. Cl.[3] A01N *9/16*

U.S. Cl. 424—321 6 Claims

1. A mite ovicidal composition comprising a biologically inert carrier and an ovicidally effective amount of a compound of the formula:



wherein one R or R^1 group is cycloalkyl of 5 to 8 carbon atoms substituted with up to 2 alkyl of 1 to 4 carbon atoms or alkenyl of 3 to 6 carbon atoms and the other R or R^1 group is alkyl of 1 to 6 carbon atoms, alkenyl of 3 to 6 carbon atoms, or phenyl or benzyl substituted with up to 2 of the same or different substituents selected from the group consisting of fluoro, chloro, bromo, trifluoromethyl, trichloromethyl, tribromomethyl and alkenyl of 1 to 2 carbon atoms; and R^2 is tetrachlorethyl.

4,269,857

CONTROL OF PLANT-VIRUS DISEASES

Takuro Tokuda; Susumu Ikeda; Yoshikazu Kubota; Tutomu Takagi, and Yuuichi Kokagi, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

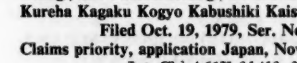
Filed Oct. 19, 1979, Ser. No. 86,441

Claims priority, application Japan, Nov. 2, 1978, 53-135382

Int. Cl.[3] A61K *31/13, 31/70*

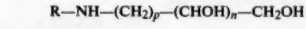
U.S. Cl. 424—325 15 Claims

1. A method of controlling a plant virus disease occurring on a plant which comprises applying an effective amount of a chemical compound represented by the formula:



wherein R is n-alkyl group having 10 to 18 carbon atoms, p represents an integer of one or two and n represents an integer of three or four, provided p+n equals four or five, or of a salt thereof onto the plant to be protected from the plant virus disease.

4. A composition for controlling a plant virus disease comprising an effective amount of at least one substance selected from the group consisting of compounds having the formula:



wherein R is n-alkyl group having 10 to 18 carbon atoms, p represents an integer of one or two and n represents an integer of three or four, provided p+n equals four or five, and salts thereof, and at least one member selected from the group consisting of carriers, diluents, spreaders and other adjuvants which are applicable to an agricultural chemical.

4,269,858

ANTIHYPERTENSIVE METHOD

John F. DeBernardis, Lake Villa, and John J. Kyncl, Lake Forest, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 28, 1980, Ser. No. 144,742

Int. Cl.[3] A61K *31/135*

U.S. Cl. 424—330 6 Claims

1. The method of lowering elevated blood pressure in warm-blooded animals consisting essentially in orally administering to a hypertensive animal an antihypertensively effective amount of 2-fluoronorepinephrine.

4,269,859

CELLULOSE FLOC GRANULES AND PROCESS

Erwin E. Morse, Berlin, N.H., assignor to Brown Company, Kalamazoo, Mich.

Filed Apr. 19, 1979, Ser. No. 31,544

Int. Cl.[3] A61K *9/20, 47/00*

U.S. Cl. 424—362 34 Claims

1. A substantially dry process for producing cellulose granules having a particle size as follows:

less than five percent (5%) on a 35 mesh (Tyler) screen;

less than thirty percent (30%) through a 100 mesh screen;

and less than five percent (5%) through a 200 mesh screen, as measured on a sifter using a 25 gram sample and with a sieving time of 25 minutes, said cellulose granules consisting essentially of substantially dry compacted, granulated, and screened cellulose consisting essentially of cellulose fibers, which comprises the steps of substantially dry compacting cellulose powder or floc, wherein the cellulose fibers have an average length on their largest dimension of between about 20 and about 55 microns, by the application of pressure into a dense sheet of compacted cellulose, breaking the sheet up into granules of cellulose by substantially dry granulation, and classifying the granules by passage through one or more sieves to yield the desired cellulose granules having the aforesaid predetermined size ranges.

4,269,860

PROCESS FOR PREPARING A GAS-DEVELOPING CHEWING GUM

Koichi Ogawa, Tokyo; Masatoshi Terasawa, Tokorozawa; Shizuo Iwata, Tama; Yoshihisa Suzuki, Kawasaki, and Hideki Tanakamaru, Urawa, all of Japan, assignors to Lotte Co. Ltd., Tokyo, Japan

Filed Nov. 13, 1979, Ser. No. 93,934

Claims priority, application Japan, Sep. 21, 1979, 54-120706

Int. Cl.[3] A23G *3/30*

U.S. Cl. 426—5 3 Claims

1. A process for preparing a gas-developing chewing gum comprising the steps of granulating as a basic component 92 to 97 parts by weight of a salt selected from the group consisting of carbonate, bicarbonate salt and mixtures thereof, together with 0.5 to 2.0 parts by weight of a constituent selected from the group consisting of sodium sulfate and anhydrous sodium sulfate and mixtures thereof, and with 0 to 5 parts by weight of a constituent selected from the group consisting of polyphosphates, sugars and organic acid salts and mixtures thereof; admixing 5 to 50 parts by weight of said granulated basic component with 50 to 95 parts by weight of an acidic component selected from the group consisting of fruit acid, fruit powder, sugar, flavoring agent and mixtures thereof to form a gas-developing composition; and thereafter

introducing 5 to 20 parts by weight of said composition into 80 to 95 parts by weight of a chewing gum.

4,269,861

PROCESS FOR PREPARING FRENCH FRIED POTATOES AND APPARATUS

Andrew A. Caridis, Foster City; Clark K. Benson, Millbrae; Steven G. Leary, San Mateo, and Arthur A. Nilsen, San Francisco, all of Calif., assignors to Heat and Control, Inc., So. San Francisco, Calif.

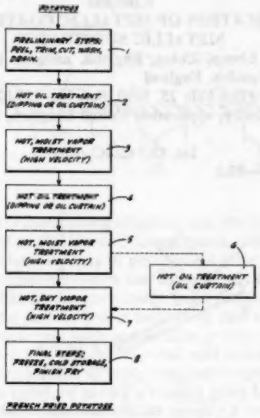
Filed Feb. 21, 1979, Ser. No. 13,461

Int. Cl.[3] A23L *1/216*

U.S. Cl. 426—438 8 Claims

1. In a process for preparing pre-fried french fry potatoes in which potatoes are first peeled, trimmed, cut into french fry strips and then washed, the steps comprising: immersing the strips in a hot oil bath at a temperature of between 250° F. and 350° F. for a period of about 15 to 35 seconds to increase the

weight of the potato strips by about 2% to about 5% of the original weight of the potato strips, exposing the potato strips to a hot, moist, process vapor having a moisture content of between 60 to 65% and a temperature of about 300° F. to about 400° F. for a period of time of about 1½ to 3½ minutes; again treating the potato strips with hot oil within the initial temperature and time limitations specified above; repeating the vapor treatment step in which the strips are exposed to hot moist process vapor within the moisture, temperature and time limitations specified above; again treating the potato strips with



hot oil under substantially the same conditions; and exposing the potato strips to a hot, dry atmosphere at about 300° F. to 400° F. for a period of time of about 3 to 6 minutes serving to reduce both the moisture and oil content of the potato strips to about 23 to 31% moisture and to about 3 to 7% oil, whereby the strips may then be frozen and later finished fried for about 1½ to 3 minutes in an oil bath at a temperature from 300° F. to about 375° F. or oven reconstituted to produce french fried potatoes products which resemble in quality, color, texture and flavor french fried potatoes prepared directly from fresh potato stock.

4,269,862

USE OF 1,3,5,5-TETRAMETHYL-2-OXABICYCLO[2.2.2]OCTANE IN AUGMENTING OR ENHANCING THE AROMA OR TASTE OF FOODSTUFFS

Mark A. Sprecker, Sea Bright; Frederick L. Schmitt, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 953,128, Oct. 20, 1978, Pat. No. 4,195,099. This application Sep. 21, 1979, Ser. No. 77,539

The portion of the term of this patent subsequent to Mar. 25, 1997, has been disclaimed.

Int. Cl.[3] **A23L** *1/226*

U.S. Cl. 426—536 **2 Claims**

1. A process for augmenting or enhancing the aroma or taste of a foodstuff comprising adding to a foodstuff from 0.02 parts per million up to about 500 parts per million based on said foodstuff of 1,3,5,5-tetramethyl-2-oxabicyclo[2.2.2]octane having the structure:

4,269,863

STARCH AND AGAR CONTAINING NOODLES AND PROCESS OF PREPARING

Kaoru Inagami, Tokyo; Kazutaka Ohmura, Asaka; Masao Haruna, Tokyo, and Takeshi Terabayashi, Hino all of Japan, assignors to Calpis Shokuhin Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1979, Ser. No. 85,421

Claims priority, application Japan, Jun. 12, 1979, 54-73073

Int. Cl.[3] **A23L** *1/16;* **A21D** *2/36;* **A23L** *1/04, 1/195*

U.S. Cl. 426/575 **18 Claims**

1. A method for the production of a low-caloric noodle comprising the steps of preparing a sol mixture having a composition of 100 parts by weight of water, 0.7 to 3.5 parts by weight of agar and 10 to 40 parts by weight of starch, containing the agar in a dissolved state and the starch in an ungelatinized state and exhibiting a viscosity of 100 to 6500 cp at 55° C. and subsequently shaping the sol mixture by extrusion through an orifice.

4,269,864

MILK REPLACER FOR CARAMELS

Dominick J. Chirafisi, Bronx, and Nicholas Melachouris, White Plains, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 974,207, Dec. 28, 1978, abandoned, which is a continuation of Ser. No. 859,409, Dec. 12, 1977, abandoned, which is a continuation-in-part of Ser. No. 700,285, Jun. 28, 1976, abandoned. This application Sep. 10, 1979, Ser. No. 74,218

Int. Cl.[3] **A23C** *21/00, 11/00;* **A23G** *3/32*

U.S. Cl. 426—583 **28 Claims**

1. A milk solids replacer for caramels consisting essentially of:

(a) from about 35% to about 45% by weight dry whey solids;

(b) from about 8% to about 12% by weight sodium or calcium caseinate; and

(c) whey protein concentrate having from about 24% to about 40% protein based on the total weight of the concentrate in an amount sufficient to provide the remainder and to provide whey protein in an amount of from about 13.75% to about 17.25% by weight, said whey protein concentrate being prepared by processing whey to concentrate the protein therein or by diluting a whey protein concentrate having a protein content higher than 40%;

all percentages, unless otherwise specified, being by weight based on the total combined weight of said dry whey solids, said caseinate and said concentrate.

4,269,865

PROCESS FOR THE PRODUCTION OF A FOOD PRODUCT FROM FEATHERS

Rowland Retrum, St. Louis, Mo., assignor to Ralston Purina Company, St. Louis, Mo.

Continuation of Ser. No. 922,934, Jul. 10, 1978, abandoned. This application Oct. 12, 1979, Ser. No. 84,345

Int. Cl.[3] **A23J** *3/00*

U.S. Cl. 426—657 **3 Claims**

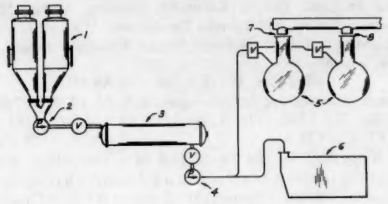
1. A process for the conversion of feathers into a food product comprising:

a. subjecting moistened feathers in a closed tank to a pressure of 15–40 psig and elevated temperature without agitation for at least about 5 minutes but less than about 15 minutes to form a pumpable pulpy mass of feathers;

b. pumping the pulpy mass to a digester

c. agitating the pulpy mass of feathers in the digester at a pressure greater than the pressure in step (a) and in the range of 40–80 psig for at least about 3 minutes but less

than about 15 minutes to hydrolyze and digest the feathers to convert the mass of feathers into a highly nutritious



food product having greater than about 70% digestible protein.

4,269,866

COATING COMPOSITION HAVING A WATER-DILUTABLE MALEINIZED OIL BASE, PROCESS FOR THE APPLICATION AND BAKING THEREOF

Gerhard Günter, Ettlingen, and Hartmut Haeufler, Aldingen, both of Fed. Rep. of Germany, assignors to Akzo N.V., Arnhem, Netherlands

Filed Feb. 15, 1980, Ser. No. 121,792

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1979, 7901275

Int. Cl.³ B05D *1/06*

U.S. Cl. 427—27 **14 Claims**

1. A coating composition based on a water-dilutable maleinized oil, characterized in that it contains a binder made up of 30–95% by weight of the water-dilutable maleinized oil and 5–70% by weight of a solid particulate epoxy group-containing compound having a number average molecular weight of at least 1000 and an epoxy equivalent weight in the range of 450 to 7500, the percentages by weight being calculated on the sum of the two solvent-free components, and said solid particulate epoxy group-containing compound having an average particle size of about 0,5 to 35 μm.

4,269,867

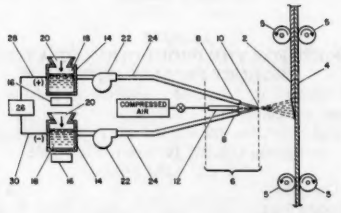
METALLIZING OF A CORRODIBLE METAL WITH A PROTECTIVE METAL

Kenneth J. Altorfer, Greenwich, Conn., and Daniel R. Marantz, Port Washington, N.Y., assignors to Texasgulf Inc., Stamford, Conn.

Filed Sep. 4, 1979, Ser. No. 72,117

Int. Cl.³ B05D *1/02*; B05B *5/06*; C23C *7/00*

U.S. Cl. 427—37 **20 Claims**



1. Apparatus for spray metallizing a substrate comprising:
at least two electrically isolated containers for holding molten metal to be sprayed;
a pair of nozzles for causing two streams of molten metal to converge at a point adjacent to the surface to be metallized;
a spray nozzle behind the point of convergence of the two streams for supplying gas to the streams at the point of convergence for propelling the metal from the point of convergence to the surface to be metallized;
conduits for conveying molten metal from the containers to each of the pair of nozzles;
means for causing a molten metal to flow from a container through a conduit to a nozzle; and
a power supply for electrifying the streams of molten metal to cause an arc at the point of convergence.

4,269,868

APPLICATION OF METALLIC COATINGS TO METALLIC SUBSTRATES

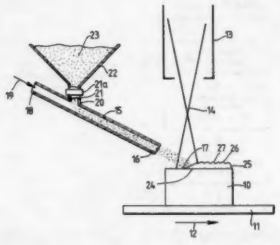
Norman B. Livsey, Colne, England, assignor to Rolls-Royce Limited, London, England

Filed Feb. 25, 1980, Ser. No. 125,022

Claims priority, application United Kingdom, Mar. 30, 1979, 11294/79

Int. Cl.³ C23C *17/00*

U.S. Cl. 427—53.1 **7 Claims**



1. A method of applying a metallic coating to a metallic substrate comprising:
(a) simultaneously directing a laser beam and a gas stream containing entrained particles of the metallic coating material on to the same area of the substrate so that said laser beam melts said particles forming a molten pool of said metallic coating material in the area of impingement of said laser beam upon said substrate, and
(b) effecting relative movement between said laser beam and substrate while continuing to direct said particle carrying gas stream on to the area of laser beam impingement so that said area of laser beam impingement and hence a pool of said molten metallic coating material traverses said substrate at a rate such that fusion takes place between said substrate and said molten coating material.

4,269,869

METHOD FOR IMPROVING SURFACE PROPERTIES OF POROUS INORGANIC MATERIAL BY COATING

Yasushi Morohashi, Tokyo; Yasuji Komatsu, Hoya; Toshiaki Hanyuda, Yokohama; Eiichiro Takiyama, Kamakura; Tohei Horishima, Koganei, and Kenji Sugimoto, Chigasaki, all of Japan, assignors to Showa Highpolymer Co., Ltd. and Taisei Corporation, both of Tokyo, Japan

Filed Nov. 20, 1979, Ser. No. 96,167

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—54.1 **10 Claims**

1. A method for improving the surface properties of a porous inorganic material which comprises
applying to said material at least one coating of an infiltratable light-curable paint having a viscosity of 0.5 to 300 poise, allowing the first coating of said paint to infiltrate into said material and exposing the paint to ultraviolet radiation so that the depth of infiltration of paint into the porous inorganic material is from 5 to 5000 microns, at least the outermost paint coating being an infiltratable

light-curable paint consisting essentially of unsaturated spiroacetal resin.

4,269,870

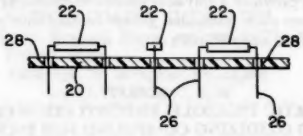
SOLDER FLUX AND METHOD

Kenneth G. Boynton, Milford, N.H., assignor to Cooper Industries, Inc., Houston, Tex.

Division of Ser. No. 469,536, May 13, 1974, Pat. No. 3,973,322. This application Feb. 2, 1976, Ser. No. 654,366

Int. Cl.³ H05K *3/34*

U.S. Cl. 427—96 **14 Claims**



1. A method of mass fluxing electrical and electronic components assembled in a perforated circuit board, said board having adjacent at least some of its perforations a metallic pattern to which the component leads can subsequently be joined by solder, and wherein the component leads extend through at least some of the perforations in said board, said method comprising applying to said leads and metallic pattern a flux active agent intermixed in a meltable material, said meltable material having the characteristics of being compatible with said solder and flux active agent, of having a melting point below that of said solder, and of being capable of forming a solid matrix in which said leads and metallic pattern are retained in a fixed relationship.

4,269,871

ANTILUMPING EXPANDABLE STYRENE POLYMERS

Elizabeth A. Blommers, Monroeville; William J. Poole, and Alvin R. Ingram, both of Murrysville, all of Pa., assignors to Arco Polymers, Inc., Philadelphia, Pa.

Filed Jun. 30, 1980, Ser. No. 164,442

Int. Cl.³ C08J *9/14*

U.S. Cl. 427—222 **4 Claims**

1. In a process for making expandable styrene polymer particles by suspending styrene polymer particles in water containing a suspending agent, heating the suspension to a temperature between 60° and 150° C., and thereafter impregnating said particles with a blowing agent, the improvement comprising dissolving 0.04 to 0.25 weight percent based on the polymer particles of a conjugated diene elastomer in a portion or all of the blowing agent, adding the solution of elastomer and the remaining blowing agent, it any, to the suspended polymer particles to impregnate the particles with blowing agent and coat the particles with elastomer, whereby the final particles have reduced lumping during pre-expansion with heat.

4,269,872

METHOD OF PRODUCING AN EROSION RESISTANT SURFACE

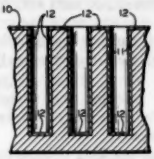
John W. Erickson, Huntington Beach, Calif., assignor to Kobe, Inc., City of Commerce, Calif.

Division of Ser. No. 50,920, Jun. 21, 1979. This application Mar. 26, 1980, Ser. No. 134,049

Int. Cl.³ C23C *13/04*

U.S. Cl. 427—239 **6 Claims**

1. The method of reducing erosion of a surface subject to contact by a high velocity fluid containing abrasive particulates, comprising the steps of: forming a closely spaced series of depressions in said surface, each said depression having walls normal to the surface and a depth substantially in excess of the width of the depressions; and applying an erosion resistant coating to the remaining portions of said surface and to all surfaces of said depressions, whereby the erosion of the erosion



resistant coating from said surface creates a multitude of closely spaced, parallel walled columns having unprotected outer surfaces and side walls of erosion resistant material.

4,269,873

2-, 5-, AND 6-SUBSTITUTED-1-CARBADETHIAPEN-2-EM-3-CARBOXYLIC ACIDS

Burton G. Christensen, Scotch Plains; David B. R. Johnston, Warren, and Susan M. Schmitt, Scotch Plains, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 25, 1979, Ser. No. 60,552

The portion of the term of this patent subsequent to Apr. 28, 1998, has been disclaimed.

Int. Cl.³ C07D *487/04*; A61K *31/40*

U.S. Cl. 424—274 **7 Claims**

1. A compound having the structure:

and the pharmaceutically acceptable salts thereof; wherein R^6 is selected from the group consisting of hydrogen and loweralkyl; R^7 is selected from the group consisting of: hydroxyloweralkyl which may be substituted with cycloloweralkyl, phenyl, trifluoromethyl, dioxolane, carboxyl, methyltetrazole and aminomethylphenyl and aminoloweralkyl; R^8 is selected from the group consisting of hydrogen, loweralkyl which may be substituted with amino, formamidino, acetamidino, guanidino, loweralkanoyl, hydroxy, halo and morpholane, phenyl which may be substituted with aminomethyl, formamidinomethyl and acetamidinomethyl, methylthiadiazole, methyltetrazole, pyridine, aminomethylthiadiazole and aminomethyltetrazole; and R^9 is selected from the group consisting of loweralkyl, cycloloweralkyl, cycloloweralkylloweralkyl, phenyl, halophenyl, loweralkoxyphenyl and trifluoromethyl; and wherein R^7 is not 1-hydroxyethyl when R^6 is hydrogen and R^8 is 2-aminoethyl.

7. An antibiotic pharmaceutical composition comprising a therapeutically effective amount of a compound according to claim 1 and a pharmaceutical carrier therefor.

4,269,874

METHOD AND APPARATUS FOR MARKING PARTS

Timothy R. Pryor, Tecumseh; David M. Alway, and Omer L. Hageniers, both of Windsor, all of Canada, assignors to Diffracto Ltd., Windsor, Canada

Filed Aug. 8, 1979, Ser. No. 64,866

Int. Cl.³ B05D *1/32*

U.S. Cl. 427—282 **14 Claims**

1. A method of marking an object comprising:

(a) providing means for forming a spray of marking liquid;

(b) providing a rotatable stencil member adjacent said spraying means for receiving said spray of marking liquid, said

stencil member having at least one opening therein forming at least one stencil character;
(c) positioning an object to be marked adjacent said stencil member;
(d) positioning said stencil member such that a stencil character is interposed between said spraying means and said object;
(e) spraying said marking liquid to form said spray to mark the object with a mark corresponding to said stencil character; and
(f) periodically rotating said stencil member sufficiently rapidly to effect removal of marking liquid therefrom by centrifugal force.

14. Apparatus for marking objects comprising:
(a) means for forming a spray of marking liquid;
(b) a rotatable stencil member positioned adjacent said spraying means for receiving said spray of marking fluid, said stencil member having at least one opening therein forming at least one stencil character;
(c) means for positioning an object to be marked adjacent said stencil member;
(d) means for automatically rotating said stencil member such that a stencil character is interposed between said spraying means and said object;
(e) means for spraying said marking liquid substantially horizontally to form said spray to mark the object with a mark corresponding to said stencil character;
(f) means for periodically rotating said stencil member such that a portion thereof bearing marking liquid is moved through a body of cleaning liquid at a marking liquid removal location for removal of marking liquid therefrom; and
(g) means for minimizing relative motion of said object and stencil member during step (e).

4,269,875

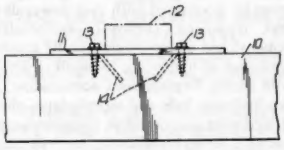
METHOD OF PRESERVING TIMBER

Carl C. Bechgaard, Vejle, Denmark, and Joseph Dulat, Fetcham, England, assignors to Wood-Slimp GmbH, Chur, Switzerland

Continuation of Ser. No. 899,884, Apr. 25, 1978, abandoned. This application Oct. 31, 1979, Ser. No. 89,722

Int. Cl.[3] **B05D** *3/12;* **B27K** *3/16*

U.S. Cl. 427—291 **15 Claims**



1. A method of preserving timber from decay liable to be induced in the presence of moisture, which comprises forming at least one cavity in the timber and inserting in each such cavity one or more solid elements wherein each element consists of a water-soluble wood-preservative compound or composition which is solid at ambient temperatures and fused into a monolithic body shaped to substantially fit the cavity.

4,269,876

TREATMENT OF CARBON FIBRE

David J. Lind, Breadsall; Valerie J. Coffey, Long Eaton, and Joyce Hallam, Milford, all of England, assignors to Rolls-Royce Limited, London, England

Division of Ser. No. 948,293, Aug. 29, 1978. This application May 14, 1980, Ser. No. 149,930

Claims priority, application United Kingdom, Oct. 4, 1977, 41140/77

Int. Cl.[3] **B05D** *3/10, 3/00*

U.S. Cl. 427—309 **2 Claims**

1. In a method of incorporating carbon fibers in a resin matrix with enhanced strength thereof, the improvement comprising the steps of:
(1) subjecting the fiber to a surface removal step in which the surface layer of the fiber is removed together with any flaws therein to leave functional groups on the thus-exposed surface of said fiber and subsequently
(2) deactivating the fiber surface wherein at least some of the functional groups on the thus-exposed surface of said fiber are rendered incapable of forming a chemical bond with said resin matrix by coating said fiber with a polymer which is incapable of forming a chemical bond with either the functional groups on said thus-exposed fiber surface or said resin matrix material and wherein said polymer coating provides a physical barrier to chemical bonding between such functional groups on said thus exposed fiber surface and said resin matrix material.

4,269,877

AROMATIC TRIAZOLE, PRECIPITATION COMPOUND AND OXIDIZING COMPOUND FOR INCREASED SURFACE PROTECTION AND IMPROVED ADHESION OF BRASS COATED STEEL TO RUBBER

Robert M. Shemenski, Sr., North Canton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 567,586, Apr. 14, 1975. This application Sep. 25, 1975, Ser. No. 616,704

Int. Cl.[3] **B05D** *3/02, 3/00;* **B29H** *17/08, 17/10*

U.S. Cl. 427—327 **2 Claims**

1. A method of improving the ability of a brass coated steel tire cord to adhere to rubber after vulcanization comprising cleaning the brass coated steel tire cord, treating the clean tire cord with benzotriazole and (A) cyclohexylamine borate and zinc chromate or (B) zinc chromate and then drawing said cord.

4,269,878

STAND STRUCTURE

Harry N. Boström, Box 805, Borlange, Sweden

Filed Jun. 25, 1979, Ser. No. 51,647

Int. Cl.[3] **A47G** *1/16;* **G08B** *3/00;* **G10K** *1/068*

U.S. Cl. 428—11 **2 Claims**

1. Stand structure, comprising a base portion, a pillar projecting from said base portion, a bracket projecting sideways from said pillar and at least one vertically extending journalling shaft having a journalling end and a lower end, said bracket comprising two preferably identical parts or members each having an elongated indentation projecting from an end surface thereof said parts being superimposed in a reversed manner such that said indentations together define an opening preferably having a circular section, said journalling shaft being inserted into the opening so defined, the pillar and the bracket further having cooperating means to keep the bracket parts pressed against each other and hold said lower end of the journalling shaft clamped between said bracket parts, wherein the pillar is a tubular member which has in one end thereof diametrically opposite guide means each one having guiding surfaces located at a distance from each other in the circumferential direction of the bar or tubular member corresponding to the thickness of the assembled bracket, said bracket preferably in an opposite end surface having a punched out portion said

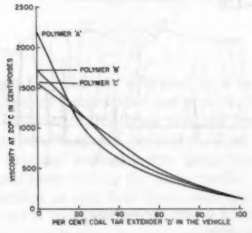
parts being superimposed in a reversed manner such that said punched portions are in register with each other and the end of the bar or tubular member provided with said guiding surfaces is inserted into the punched out portions of the bracket such that the edge portions of the bracket parts surrounding the punched out portions preferably by frictional force are kept between the guiding surfaces of said bar or tubular member, wherein the bracket in the assembled form defines a star having arms extending therefrom.

4,269,879

SOLVENTLESS EPOXY-BASED COATING COMPOSITION, METHOD OF APPLYING AND ARTICLE COATED THEREWITH

Murray L. Davis, Boxford, Mass., assignor to The Dampney Company, Everett, Mass.

Filed Apr. 20, 1979, Ser. No. 31,840
Int. Cl.³ F16L *9/02, 9/08*
U.S. Cl. 428—36 **25 Claims**



1. A coating composition having a viscosity less than about 1000 cps. which is substantially free of volatile solvent consisting essentially of:

(a) an epoxy fraction consisting of polyphenol epoxy resins and mixtures thereof; and,

(b) a curing fraction consisting essentially of:

(1) about 20–80 wt.-% based on the total coating composition of a non-volatile, aromatic extender selected from the group consisting of coal tar, distillates of coke and petroleum with boiling points above about 200° C., and mixtures thereof;

(2) an amine curing agent having a molecular weight of about 200–600 selected from the group consisting of:

(i) cycloaliphatic diamines having a single amine group directly attached to a single ring structure and the other amine group directly attached to a carbon atom in an aliphatic chain or to a second ring structure;

(ii) polyamines having polyaliphatic oxide back-bones; and,

(iii) mixtures thereof; and,

(3) a curing accelerator selected from the group consisting of tertiary amines.

24. An article comprising a metal or concrete conduit coated along at least one surface with a coating composition consisting essentially of the reaction product of:

(a) an epoxy fraction consisting essentially of polyphenol epoxy resins; and,

(b) a curing fraction consisting essentially of an amine curing agent and from about 20–80 wt.-% based on the total coating composition of a non-volatile, aromatic extender wherein said amine curing agent has a molecular weight of about 200–600 and is selected from the group consisting of:

(i) cycloaliphatic diamines having a single amine group directly attached to a single ring structure and the other amine group directly attached to a carbon atom in an aliphatic chain or to a second ring structure;

(ii) polyamines having polyaliphatic oxide back-bones; and,

(iii) mixtures thereof;

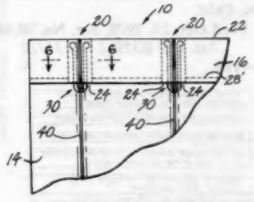
and said aromatic extender is selected from the group consisting of coal tar, distillates of coke and petroleum with boiling points above about 200° C. and mixtures thereof.

4,269,880

DISPOSABLE SELF-PLEATING DRAPES AND METHOD FOR MAKING SAME

Debra A. Nalepka, 25 Woodland Dr., Avon, Conn. 06001

Filed Jan. 13, 1978, Ser. No. 869,166
Int. Cl.³ A47H *23/08*
U.S. Cl. 428—43 **18 Claims**



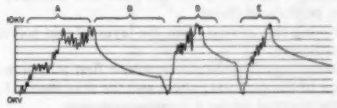
1. A disposable self-pleating drape for use with a plurality of drapery hooks each having at least two spaced parallel prongs, said drape comprising a single piece of disposable material including a sheet defining the body of the drape, an elongated pleating strip having an upper edge integrally connected to the upper edge of said sheet along a common fold line defining the upper edge of said drape and extending along a longitudinally disposed upper marginal portion of the sheet in overlying relation therewith, and means connecting said pleating strip in direct face-to-face relation to said upper marginal portion of said sheet along longitudinally spaced and transversely extending lines of attachment to define prong receiving pockets at a longitudinally spaced series of pleating locations, said connecting means cooperating with said pleating strip and said upper marginal portion at each of said pleating locations to define at least two longitudinally spaced prong receiving pockets defining prong receiving openings between the lower edge of said pleating strip and associated position of said sheet, said prong receiving openings at each of said pleating locations being longitudinally spaced apart a distance substantially greater than the distance between the two spaced parallel prongs of an associated drapery hook.

4,269,881

ANTI-STATIC MATS AND CARPETS

Donald C. Johnson, Fremont, and Walter L. Burdorf, Port Clinton, both of Ohio, assignors to Ludlow Corporation, Needham Heights, Mass.

Filed Oct. 18, 1976, Ser. No. 733,136
Int. Cl.³ B32B *5/18*
U.S. Cl. 428—95 **15 Claims**



1. Carpet product adapted to minimize the static voltage on a person using the carpet, said carpet comprising

(a) a facing yarn comprising some electrically conductive fibers therein.

(b) a tufting substrate forming means to hold said facing yarn and formed of a fabric having a maximum resistivity of 300,000 ohms per square

(c) a polymer-based backing adherent and adjacent to said tufting substrate, said backing itself having a layer of

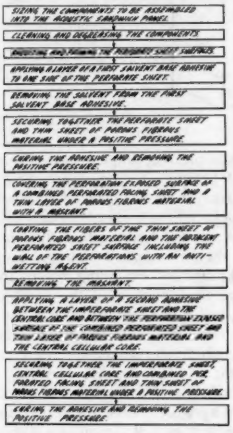
low-density polymeric foam of high electrical resistivity adherent thereto, said foam forming the bottom of said carpet product and wherein said backing has a minimum volume resistivity of about 5×10^{10} ohm-cm^{-1}

4,269,882

METHOD OF MANUFACTURING OF HONEYCOMB NOISE ATTENUATION STRUCTURE AND THE STRUCTURE RESULTING THEREFROM

Robert M. Carrillo, San Bernardino, and Muriel L. Koss, Arlington, both of Calif., assignors to Rohr Industries, Inc., Chula Vista, Calif.

Filed Oct. 29, 1979, Ser. No. 88,949
Int. Cl.[3] B32B *3/12, 31/12*
U.S. Cl. 428—116 **4 Claims**


SIZING THE COMPONENTS TO BE ASSEMBLED INTO THE ACOUSTIC SANDWICH PANEL
CLEANING AND DEGREASING THE COMPONENTS
APPLYING A LAYER OF A FIRST SOLVENT BASE ADHESIVE TO ONE SIDE OF THE PERFORATED SHEET.
REMOVING THE SOLVENT FROM THE FIRST SOLVENT BASE ADHESIVE.
SECURING TOGETHER THE PERFORATE SHEET AND THIN SHEET OF POROUS FIBROUS MATERIAL UNDER A POSITIVE PRESSURE.
CURING THE ADHESIVE AND REMOVING THE POSITIVE PRESSURE.
COVERING THE PERFORATION EXPOSED SURFACE OF A COMBINED PERFORATED FACING SHEET AND A THIN LAYER OF POROUS FIBROUS MATERIAL WITH A MASKANT
COATING THE FIBERS OF THE THIN SHEET OF POROUS FIBROUS MATERIAL AND THE ADJACENT PERFORATED SHEET SURFACE INCLUDING THE WALL OF THE PERFORATIONS WITH AN ANTI-WETTING AGENT
REMOVING THE MASKANT
APPLYING A LAYER OF A SECOND ADHESIVE BETWEEN THE IMPERFORATE SHEET AND THE CENTRAL CORE AND BETWEEN THE PERFORATION EXPOSED SURFACE OF THE COMBINED PERFORATED SHEET AND THIN LAYER OF POROUS FIBROUS MATERIAL AND THE CENTRAL CELLULAR CORE.
SECURING TOGETHER THE IMPERFORATE SHEET, CENTRAL CELLULAR CORE AND COMBINED PERFORATED FACING SHEET AND THIN SHEET OF POROUS FIBROUS MATERIAL UNDER A POSITIVE PRESSURE.
CURING THE ADHESIVE AND REMOVING THE POSITIVE PRESSURE.

1. A process for manufacturing an improved acoustic sandwich panel for attenuating a wide range of noise frequencies which is suitable structurally for use in a severe environment, said sandwich panel including a central cellular core positioned between an imperforate facing sheet and a perforated facing sheet having a plurality of perforations therethrough, the opposite side of the perforated sheet from said central cellular core having a single thin layer of porous fibrous material bonded thereto wherein a predetermined flow through resistance from the outer surface of said sandwich panel to cells of said central cellular core is established, the steps of the process comprising:

(a) cleaning and degreasing the imperforate sheet, central cellular core, perforate facing sheet and single thin layer of porous fibrous material;

(b) applying a non-conductive coating on the perforate sheet surfaces;

(c) applying a layer of a solvent base first adhesive to one side of the perforated sheet;

(d) removing the solvent from the layer of said solvent base first adhesive;

(e) securing together the solvent base first adhesive coated surface of the perforate sheet and the thin sheet of porous fibrous material under a positive pressure;

(f) curing the solvent base first adhesive and removing the positive pressure;

(g) covering the perforation exposed surface including the perforations of the combined perforated facing sheet and single thin sheet of porous fibrous material with a maskant;

(h) coating the fibers of the thin sheet of porous fibrous material and the perforated sheet surface adjacent thereto with an anti-wetting agent;

(i) removing the maskant;

(j) applying a layer of a second adhesive between the imperforate sheet and the central cellular core and between the perforation exposed surface of the combined perforated sheet and thin layer of porous fibrous material and the central cellular core;

(k) securing together the imperforate sheet, central cellular core and combined perforated facing sheet and thin single sheet of porous fibrous material under a positive pressure; and

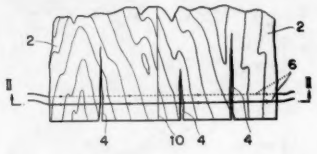
(l) curing the second adhesive and removing the positive pressure.

4,269,883

REINFORCED VENEER AND METHOD OF REINFORCING A VENEER SHEET

Katsuji Hasegawa, Ohbu, Japan, assignor to Meinan Machinery Works, Inc., Ohbu, Japan

Filed Aug. 3, 1979, Ser. No. 63,533
Claims priority, application Japan, Aug. 17, 1978, 53-100731
Int. Cl.[3] B32B *21/10, 21/14;* **B27D** *5/00*
U.S. Cl. 428—120 **27 Claims**



1. A reinforced veneer comprising

(1) a veneer sheet;

(2) at least one piece of cord extending on one side of said veneer sheet, said cord being thrust through the veneer sheet thickness at appropriate intervals such that the thrust cord projects from another side of the veneer sheet; and

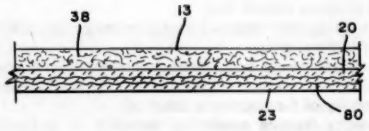
(3) a plurality of fastening means formed on the projecting portions of the cord and having a size larger than the diameter of the cord.

4,269,884

FIBER REINFORCED MULTI-PLY STAMPABLE THERMOPLASTIC SHEET

Michael P. DellaVecchia, Sparta; Joseph E. Mackey, East Hanover, and Albert H. Steinberg, Morris Plains, all of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Oct. 10, 1979, Ser. No. 83,447
Int. Cl.[3] B32B *3/10*
U.S. Cl. 428—131 **13 Claims**



1. A thermoplastic composite, laminated sheet comprising, in terms of percent by weight of each layer: (a) at least one layer comprising from about 40 percent to 100 percent of a synthetic thermoplastic polymer, about 0 percent to 50 percent of a particulate filler, and up to about 45 percent short nonsiliceous fibers having a length ranging from 0.01 to ¾ of an inch and arranged generally parallel to the plane of the sheet surface, (b) a reinforcing layer adjoining said one layer comprising 50 percent to 100 percent of synthetic thermoplastic polymer on an extruded basis, a long nonsiliceous fiber mat comprised of fibers having a length of at least 1 inch and having a weight ranging from 0.5 to 16 ounces per square foot, particu-

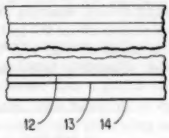
late filler ranging from 0 percent to 50 percent on an extruded basis and (c) mat positioning means disposed between said at least one layer and said mat, for holding said mat within said reinforcing layer during formation of said composite, said mat being substantially encased in a matrix of the thermoplastic polymer.

4,269,885

LAMINATED MATERIAL AND METHOD OF FORMING

John E. Mahn, 5688 Woodhaven Dr., Cincinnati, Ohio 45211

Filed Jan. 26, 1979, Ser. No. 6,750
Int. Cl.[3] B32B *7/02, 27/08*
U.S. Cl. 428—216 9 Claims



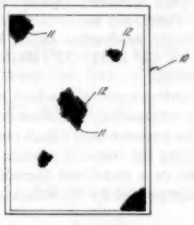
1. A laminated material for adhering to a material when subjected to a selected temperature and pressure for a selected period of time including a first layer selected from the group consisting of polyurethane and polyether, a second layer of polyester, said first and second layers being bonded to each other, said second layer having the same coefficient of expansion and contraction as said first layer, said first layer being treated to prevent it from curling, and said second layer becoming adhesive for adhering to a material when said bonded first and second layers are subjected to the selected temperature and pressure for the selected period of time.

4,269,886

NOVEL GLASS FIBER MAT

Alfredo A. Bondoc, Middlesex, N.J., assignor to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 923,553, Jul. 11, 1978, Pat. No. 4,183,782. This application Aug. 30, 1979, Ser. No. 70,991
Int. Cl.[3] B32B *7/00*
U.S. Cl. 428—219 11 Claims



1. A novel glass fiber mat comprising glass fibers, voids extending through the thickness of said mat and a binder to hold said fibers together, said fibers having a length of about ¼ to 3 inches and a diameter of about 3 to 20 microns, said mat having a thickness of about 0.1 to 3 mm. and a basis weight of about 20 to 200 g./m^2, characterized in that:

(a) at least about 70% by weight of said fibers are substantially uniformly enmeshed individual filament fibers,

(b) less than about 20% of the area of said mat are voids which extend through the thickness of the mat, the rest being fibers, and,

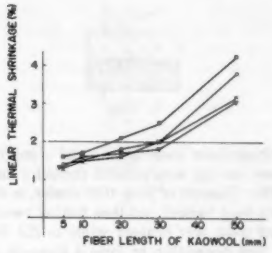
(c) at least about 80%, 30% and 10% of said voids have an equivalent diameter which is less than about 50, 10 and 5 microns, respectively.

4,269,887

CERAMIC FIBER FELT

Kazuo Sonobe, Aichi, and Takeo Kato, Toyokawa, both of Japan, assignors to Isolite Babcock Refractories Co., Ltd., Aichi, Japan

Filed May 17, 1979, Ser. No. 39,969
Claims priority, application Japan, Nov. 24, 1978, 53-145862
Int. Cl.[3] D04H *1/08, 1/10*
U.S. Cl. 428—280 9 Claims



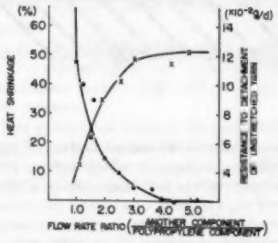
1. A ceramic fiber felt which is the product obtained by mixing alumina crystalline ceramic fibers having a filament length of from about 10 to about 30 mm and aluminosilicate non-crystalline ceramic fiber having a filament length of from about 5 to about 30 mm in weight proportions of from about 4:6 to 7.5:2.5, and binding the said crystalline and non-crystalline fibers with a binder.

4,269,888

HEAT-ADHESIVE COMPOSITE FIBERS AND PROCESS FOR PRODUCING SAME

Shozo Ejima; Susumu Tomioka; Tadao Matsumoto, and Naruaki Hane, all of Moriyamashi, Japan, assignors to Chisso Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 600,037, Jul. 29, 1975, Pat. No. 4,189,338. This application Nov. 16, 1979, Ser. No. 95,085
Claims priority, application Japan, Nov. 25, 1972, 47-118322
The portion of the term of this patent subsequent to Feb. 19, 1997, has been disclaimed.
Int. Cl.[3] D04H *1/04*
U.S. Cl. 428—296 6 Claims



4. Heat-adhesive side-by-side type composite fibers having naturally developed crimps of 12 crimps per 25 mm or less and few latent crimpability, which consist of a component composed mainly of a crystalline polypropylene and a component composed mainly of an olefin polymer or olefin polymers other than said crystalline polypropylene, having a melting point lower than that of the former component by 30° C. or more and a melt flow rate in the range of 1.5 times to 5 times that of the former component, and in a stretching ratio of 3 or more.

4,269,889
POLYURETHANE CUSHION MATERIAL AND PREPARING THE SAME

Sadaaki Takagi, 39, Mikage-cho, Okazaki-shi, Aichi-ken, Japan

Continuation of Ser. No. 742,568, Nov. 17, 1976, abandoned.
This application Apr. 5, 1978, Ser. No. 893,277
Claims priority, application Japan, Nov. 18, 1975, 50-138520
Int. Cl.[2] B32B *3/26, 5/20*
U.S. Cl. 428—315 6 Claims

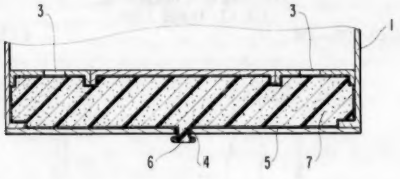
1. A polyurethane cushion material comprising a foamed polyurethane having incorporated therein a mass of crimped polyester fiber filament of 50 to 1000 denier, in which said fiber filament has been twisted and then further twisted into a double crimped state, wet heat-set while in the double crimped state, and then opened up to form a three-oriented, crimped polyester fiber filament of 50 to 1000 denier and wherein said mass amounts to from 10 to 50 percent by weight in the polyurethane cushion material.

5. A cushion material which comprises a layer of polyurethane cushion material according to claim 1, wherein said layer is bonded to a separate layer of fiber-free foamed polyurethane.

4,269,890
PROCESS AND APPARATUS FOR INTRODUCING FOAM INTO AUTOMOBILE BODY CAVITIES

Rolf Breitling, Sindelfingen; Wolfgang Mayer, Stuttgart, and Wolfgang Labatzke, Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Sep. 28, 1978, Ser. No. 946,648
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1977, 2747721
Int. Cl.[3] B29D *27/04*
U.S. Cl. 428—320 20 Claims



1. A process for introducing a material, comprising a mixture of expandable components which form a resin foam, into a body cavity, wherein said body cavity is defined by a body having openings therein, comprising the steps of:

(a) providing a bag having a predetermined volume, corresponding to an amount of the body cavity to be filled with the resin foam, and a filler opening means, said bag being in a non-filled condition;

(b) introducing the bag in the non-filled condition into said body cavity; and

(c) temporarily filling the bag with a fluid prior to the introduction of said material into the bag, whereby the bag assumes a proper initial position for introducing said material, by inflation, and obstacles to the flow of the subsequently introduced material in the bag is alleviated; and

(d) introducing said material into the bag through the filler opening means, whereby said bag prevents said material from leaking out of said openings in the body prior to the foaming of said material.

4,269,891
RECORDING SHEET FOR INK JET RECORDING

Nobuhiko Minagawa, Fujinomiya, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jun. 28, 1979, Ser. No. 52,893
Claims priority, application Japan, Jun. 28, 1978, 53/78315
Int. Cl.[3] B32B *5/16;* G01D *15/34*
U.S. Cl. 428—335 11 Claims

1. An ink jet recording sheet which can be viewed under both reflected and transmitted light comprising a support and an ink absorbing layer provided thereon comprising a white pigment having ink adsorbing ability and a binder resin possessing film forming ability, wherein the weight ratio of white pigment to binder resin is about 0.2 to 10, the degree of opacity of said sheet being about 55.0 to 97.5% and the ink absorbing power of said ink absorbing layer being about 1.5 to 18.0 mm/min.

4,269,892
POLYESTER RIBBON FOR NON-IMPACT PRINTING

Meredith D. Shattuck, San Jose, and William J. Weiche, Los Gatos, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 4, 1980, Ser. No. 118,161
Int. Cl.[3] B32B *9/04;* B41J *31/00*
U.S. Cl. 428—337 10 Claims

1. A ribbon for non-impact thermal transfer printing comprising a transfer layer and a substrate comprising a polyester resin containing from about 15% to about 40% by weight of electrically conductive carbon black.

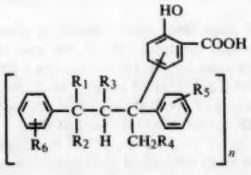
6. A ribbon for non-impact thermal printing comprising a transfer layer and a substrate which comprises polyester resin which has been cross-linked by reaction with an isocyanate, and which contain from about 15% to about 40% by weight of electrically conductive carbon black.

4,269,893
RECORDING MATERIAL CONTAINING A NOVEL COLOR DEVELOPER

Hajime Kato; Masato Satomura, both of Fujinomiya, and Kozo Sato, Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed May 10, 1979, Ser. No. 37,608
Claims priority, application Japan, May 12, 1978, 53/56214
Int. Cl.[3] B41L *1/20;* B41M *5/16, 5/22*
U.S. Cl. 428—341 11 Claims

1. In a recording material in which images are formed by the reaction of a substantially colorless color former with a color developer, the improvement which comprises said color developer comprising the reaction product of salicyclic acid and a styrene dimer or a metal salt thereof, wherein said reaction product is represented by the following general formula:



wherein R_1 to R_6 each represents a hydrogen atom or an alkyl group having 1 to 5 carbon atoms, R_5 and R_6 represents a hydrogen atom or an alkyl group having 1 to 5 carbon atoms or halogen atom and n is 1 or 2.

2. The recording material of claim 1, wherein said color

developer is coated on a support in an amount of 0.1 g/m^2 to 3.0 g/m^2.

4,269,894

ELECTRIC WINDINGS AND PRODUCTION THEREOF CHARACTERIZED BY THE USE OF A CONDENSATION TYPE SILICON RESIN FOR COMBINATION WITH AN ADDITION TYPE SILICON RESIN

Masahiko Sakai, Hitachi; Shinichi Toyoda, Katsuta; Toshikazu Narahara, Tokaimura; Takeshi Hakamada, and Tomoya Tsunoda, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 3, 1979, Ser. No. 99,850

Int. Cl.^{3} H01B *3/40, 3/46, 13/08, 17/62*

U.S. Cl. 428—377 **17 Claims**

1. A winding for electric rotating machines having a plurality of layers of a sheet-form composite insulating material wrapped around a conductor and a cured resin impregnated into said layers, said cured resin being of an epoxy-isocyanate varnish, said sheet-form composite insulating material comprising two or more sheet-form insulating materials bonded by a binder, characterized in that said binder is a mixture of a condensation polymerization type silicone resin containing hydroxyl groups in the molecule and an addition polymerizatior type silicone resin.

8. A process for producing an electric winding comprising wrapping around a conductor a plurality of layers of a sheet-form composite insulating material comprising two or more sheet-form insulating materials bonded by a binder, impregnating the layers with an impregnating varnish of an epoxy-isocyanate resin and curing the resulting impregnated varnish, the improvement wherein said binder is a mixture of a condensation polymerization type silicone resin containing hydroxyl groups in the molecule and an addition polymerization type silicone resin.

4,269,895

FREE-FLOWING PACKING MATERIAL OF FOAMED PLASTICS PARTICLES

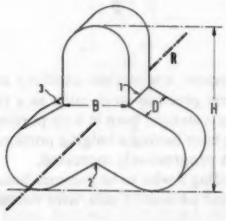
Herbert Borchert; Walter Albert, both of Frankfurt am Main; Günter Kohaut, Königstein; Ulrich Schulte, Kelkheim, and Bruno Rapp, Alsbach-Hähnlein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 6, 1979, Ser. No. 91,779

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1978, 2848338

Int. Cl.^{3} B32B *27/00*

U.S. Cl. 428—402 **3 Claims**



1. A free-flowing packing material consisting of foamed plastics particles having a three-legged, star-like shape the three legs of which are on the same plane, wherein the ratio of particle thickness (D) to particle height (H) is from 1:2.75 to 1:3.3 and that of leg width (B) to particle height (H) is from 1:2.2 to 1:2.5; the height (H) being from 10 to 60 mm.

4,269,896

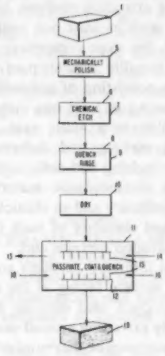
SURFACE PASSIVATED ALKALI HALIDE INFRARED WINDOWS

Frederick G. Yamagishi, Newbury Park, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 31, 1979, Ser. No. 71,605

Int. Cl.^{3} B05D *3/06;* B32B *9/04*

U.S. Cl. 428—411 **20 Claims**



1. A moisture resistant alkali halide crystal optical element comprising a crystal substrate having passivated hydroxyl ion free outer surfaces, defined exclusively by alkali cations and halogen anions maintained in a spatial relationship with respect to each other by electrostatic bonds, coated with a thin amorphous saturated film of polymerized carbon and hydrogen atoms.

16. A process for rendering an alkali halide crystal moisture resistant comprising the steps of:

(a) mechanically polishing the surface of said crystal;

(b) chemically etching said surface by dipping said crystal into an aqueous solution of hydrochloric acid;

(c) causing the etching action of said hydrochloric acid solution to cease by dipping said crystal in an alcohol whose structure is $C_nH_{2n+1}OH$ where n is greater than 1 and less than 4;

(d) removing said alcohol by causing a flow of air to impinge upon said crystal and subsequently placing said crystal in a plasma reactor;

(e) evacuating said reactor and subsequently causing a potentially reactive atmosphere to be created by introducing a chlorofluorocarbon gas into said reactor at a preselected flow rate and pressure;

(f) creating a first plasma and causing the molecules of said reactive gases to be bombarded by electrons within said plasma to create nascent halogen anions which displace hydroxyl anions thereby passivating the surface of said crystals;

(g) terminating said first plasma and evacuating said reactor to remove said chlorofluorocarbon gas;

(h) causing an alkane gas to be introduced into said reactor at a preselected flow rate and pressure;

(i) creating a second plasma in said reactor thereby causing said alkane gas to polymerize and deposit onto the surface of said crystal;

(j) terminating said second plasma, evacuating said system and introducting an alkene gas into said reactor to create a quenching atmosphere; and

(k) removing said coated crystal from said reactor after said crystal has been alowed to stand in said alkane gas overnight.

4,269,897

FLEXIBLE IMPACT RESISTANT TRIM AND METHOD FOR MANUFACTURE THEREOF

Leo Gans, Teaneck, N.J.; Paul F. Bruins, Douglaston, N.Y.; Jay B. Shapiro, Roslyn, N.Y., and Myron Rothman, Westbury, N.Y., assignors to Voplex Corp., Pittsford, N.Y.

Filed Dec. 1, 1978, Ser. No. 965,487
Int. Cl.[3] B29F *3/10*
U.S. Cl. 428—419 17 Claims

1. In a process for extruding resilient, impact resistant thermoplastic products with at least one visible region having a metallic appearance, the steps comprising

providing a non-metallic film strip of a material selected from the group consisting of polysulfones and polyether sulfones and having at least one metallized surface, said non-metallic film strip with said metallized surface thereon having melting and deformation temperatures higher than the melting and deformation temperatures of the transparent thermoplastic material to be extruded thereon and a resiliency and an elasticity at least as high as the resiliency and elasticity of such transparent thermoplastic when extruded thereon and,

while feeding said film strip through an extrusion die with said metallized surface facing in the direction where, in the extruded product, said metallic appearance is to be visible, thermally extruding around said metallized surface film strip said transparent thermoplastic material thereby forming from said film strip and said transparent thermoplastic material a flexible, impact resistant thermoplastic product.

10. An extruded thermoplastic impact resistant product with at least one visible region having a metallic appearance said product comprising a non-metallic film strip of a material selected from the group consisting of polysulfones and polyether sulfones and having at least one metallized surface and a transparent thermoplastic material extruded about said non-metallic film strip having a melting and deformation temperature higher than the melting and deformation temperature of said transparent thermoplastic material and a resiliency and an elasticity at least as high as the resiliency and elasticity of such transparent thermoplastic, said non-metallic film strip forming with said transparent thermoplastic material a flexible, impact resistant product.

4,269,898

RESISTANCE MATERIAL

Alexander H. Boonstra; Cornelis A. H. A. Mutsaers, and Franciscus N. G. R. Van der Kruijs, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 14, 1979, Ser. No. 75,468
Claims priority, application Netherlands, Sep. 20, 1978, 7809553
Int. Cl.[3] B32B *15/00*
U.S. Cl. 428—426 7 Claims

1. A resistance material consisting of a mixture of at least one metal oxidic compound, a permanent low melting glass or synthetic resin binder and a temporary organic binder, the at least one metal oxide material comprising a metal rhodate as the resistance-determining component, wherein said resistance-determining component consists of thallium rhodate of the formula $TlRh_2O_4$.

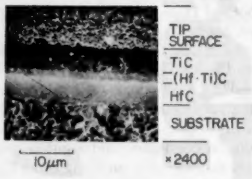
7. A compound of the formula $Tl_xPb_{(1-x)}Rh_2O_4$ wherein $0.5 \leqq x \leqq 1$.

4,269,899

SURFACE HAFNIUM-TITANIUM CARBIDE COATED HARD ALLOY AND METHOD

Moriaki Fuyama; Haruhiko Honda, and Mitsuru Ura, all of Hitachi, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Jul. 2, 1979, Ser. No. 54,274
Claims priority, application Japan, May 22, 1979, 54-63090
Int. Cl.[3] B32B *15/04*
U.S. Cl. 428—457 19 Claims



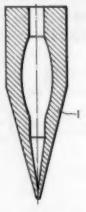
1. A surface coated hard alloy material comprising: a substrate made of a cemented carbide, cermet or the like material; a first coating layer constituted by a film of a hafnium compound and coating said substrate; a second coating layer constituted by a film of solid solution of a hafnium compound and a titanium compound and coating said first coating layer; and a third coating layer constituted by a film of a titanium compound.

4,269,900

SOLDERLESS CAPILLARY CHIPS

Minoru Ozawa, Urawa, Japan, assignor to Adamant Kogyo Co., Ltd., Tokyo, Japan

Filed Jul. 12, 1979, Ser. No. 56,848
Int. Cl.[3] B32B *1/06;* A44C *17/00*
U.S. Cl. 428—542 2 Claims



1. In combination, a solderless capillary chip formed of a corundum-system precious stone such as a ruby or sapphire, said chip having a straight bore in a tip portion thereof, with a communicating bore having a bulging portion, the inner diameter of which is progressively increased;

means for feeding a wire to be pressure bonded through said bores so that an end of said wire extends from said tip portion;

means for heating said tip portion to cause said wire end to form a ball;

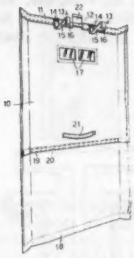
means comprising said tip portion for pressure bonding said ball to a substrate; and

means comprising an exterior surface of said tip portion for severing a portion of said wire adjacent the bonded ball from the remainder of said wire.

4,269,901
DEVICE FOR PROTECTION AGAINST FIRE

Francis N. Chamberlain, 69 Wood St., Dalby, Queensland, Australia (4405)

Filed Aug. 7, 1979, Ser. No. 64,505
Int. Cl.³ A47G *5/04*
U.S. Cl. 428—542 **10 Claims**

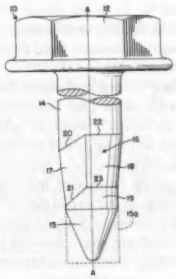


1. A shield for protection against fire, comprising:
a pliable curtain of heat-insulating material having front and rear faces;
a resilently flexible top stiffener member secured to and extending along an upper edge of said curtain for holding said curtain transversely extended;
a window of transparent, heat-resistant material in an upper part of the sheet; and
an upper handle secured at the rear face of said curtain to said top stiffener member;
said shield being rollable into a compact roll for storage, and being vertically extendible for protection against fire by lifting said handle such that said curtain is suspended from and transversely extended by said top stiffener member.

4,269,902
EXTRUDING AND TAPPING SCREW AND BLANK FOR MANUFACTURE OF SUCH SCREW

Henry A. Sygnator, Arlington Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Division of Ser. No. 883,061, Mar. 3, 1978, Pat. No. 4,179,976. This application Aug. 9, 1979, Ser. No. 65,246
Int. Cl.³ F16B *25/00*
U.S. Cl. 428—577 **8 Claims**

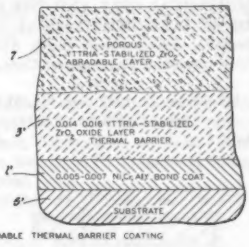


1. A screw blank used in the formation of an extruding and thread-forming screw fastener, including a shank with an enlarged head at one extremity, the shank comprised of a substantially cylindrical upper portion of a predetermined diameter adjacent the head of the blank, a lead portion formed at the extremity opposite the head, the largest diameter of the lead portion being less than the predetermined diameter of the upper shank portion, an intermediate, transition shank portion between the lead and the upper shank portions and including a pair of dissimilar partially frustoconical tapering regions forming two opposing, peripheral segments of said transition portion located on either side of a plane extending longitudinally of the blank, a first of said two opposing peripheral segments merging with the upper shank portion along a juncture line lying on a plane transverse of said shank which is disposed at an acute angle downwardly relative to a plane extending perpendicularly to the longitudinal axis of the blank, the lowermost region of the first of said two segments extending downwardly on the shank a distance from the head which is greater than the extent of the lowermost region of the second of said two segments, the angle of taper of at least the first of said two peripheral segments relative to the longitudinal axis of the blank being generally 6° so that a single lobular region is created on a blank which facilitates the formation of a screw with a thread-forming region having a plurality of partial threads on the lobular region and an absence of threads on the opposing peripheral side of the screw which therefore minimizes the drive torque to apply a screw of this type.

4,269,903
ABRADABLE CERAMIC SEAL AND METHOD OF MAKING SAME

David L. Clingman, Carmel; John R. Cavanagh, Brownsburg; Berton Schechter, Indianapolis, and Kenneth R. Cross, Lebanon, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 6, 1979, Ser. No. 73,550
Int. Cl.³ B32B *15/04*
U.S. Cl. 428—591 **3 Claims**



ABRADABLE THERMAL BARRIER COATING

1. A thermal barrier-fluid seal abradable coating for use in machinery having cooperating members capable of relative rotational movement and operating in a high temperature environment, at least one of said members being the coating substrate, the coating on said substrate comprising a bond layer consisting essentially of a NiCrAlY alloy covering a wear surface of said substrate, a thermal barrier layer on said bond layer consisting essentially of zirconia and a zirconia stabilizing oxide selected from the group consisting of Y_2O_3, MgO and CaO, and an abradable layer on said thermal barrier layer consisting essentially of porous stabilized zirconia, said porous zirconia resulting from the thermal decomposition of an organic filler material codeposited with the stabilized zirconia on said barrier layer, said abradable layer having from about 20 to about 33% voids.

2. In a turbomachine having two members capable of relative rotational movement, at least one of the members having a thermal barrier coating of the stabilized zirconia type subject to rubbing contact, and a bond layer of a NiCrAlY alloy between said thermal barrier coating and said member, the improvement comprising a porous abradable layer on said coating consisting essentially of zirconia containing an oxide from the group consisting of Y_2O_3, MgO and CaO, said porous abradable layer resulting from the thermal decomposition of a polyester particulate filler codeposited with said zirconia and said oxide in an amount of from about 20 to about 33% by volume to achieve the desired layer density and abradability.

4,269,904

MANGANESE SURFACE COATED STEEL MATERIALS

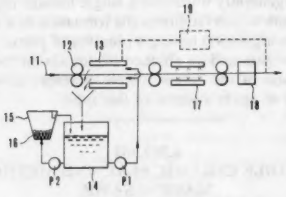
Teruo Ikeno, Mitaka; Satoshi Kado, Fujisawa; Saburo Ayusawa, Funabashi; Hironobu Kawasaki, Machida, and Takashi Watanabe, Ayase, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jun. 1, 1979, Ser. No. 44,486

Claims priority, application Japan, Jun. 5, 1978, 53-67467; Jul. 20, 1978, 53-88639; Oct. 31, 1978, 53-134038; Nov. 2, 1978, 53-135423

Int. Cl.[3] **B32B** *15/08, 15/18*

U.S. Cl. 428—623 **6 Claims**



1. A coated steel material having excellent corrosion resistance, comprising a manganese coating and hydrated $MN.MNO_3$ of thickness 400 to 1000 Å formed on the manganese coating.

4,269,905

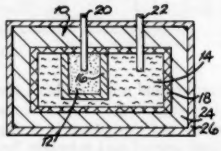
ELECTROCHEMICAL CELL AND THE PROTECTION OF AN ELECTROCHEMICAL CELL

Roger J. Wedlake, Johannesburg, South Africa, assignor to South African Inventions Development Corp., Pretoria, South Africa

Filed Nov. 28, 1979, Ser. No. 97,949

Int. Cl.[3] **H01M** *14/00*

U.S. Cl. 429—8 **26 Claims**



1. A method of reducing the potential hazard presented by electrochemical cell contents escaping from an electrochemical cell, which method includes the step of associating a sorbent micromolecular sieve material with an electrochemical cell to sorb the electrochemical cell contents escaping from the cell, the micromolecular sieve material being sealed off from said cell contents and the cavities in the micromolecular sieve material being substantially free of said cell contents, and said material having an average window size of less than 1 micron leading into its internal cavities the window size being selected such as to permit rapid sorption of the cell contents into said cavities, effectively to reduce the potential hazard.

14. An electrochemical cell which has a sorbent micromolecular sieve material associated therewith for sorbing electrochemical cell contents escaping from the cell thereby reducing the potential hazard presented by such escaping contents, the micromolecular sieve material being sealed off from said cell contents and the cavities in the micromolecular sieve material being substantially free of said cell contents, and said material having an average window size of less than 1 micron leading into its internal cavities the window size being selected such as to permit rapid sorption of the cell contents into said cavities, effectively to reduce the potential hazard.

4,269,906

PUMP DEVICE

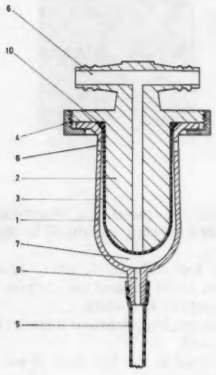
Rune Schmechtig, Nol, Sweden, assignor to Aktiebolaget Tudor, Sundbyberg, Sweden

Filed Sep. 12, 1978, Ser. No. 941,790

Claims priority, application Sweden, Sep. 12, 1977, 7710182

Int. Cl.[3] **H01M** *2/38;* **F04B** *45/00*

U.S. Cl. 429—67 **5 Claims**



1. A pump device for intermittently pressurizing a working fluid, comprising:

a pump house having a primary portion and a secondary portion forming a space therebetween,

said secondary portion being cup-shaped, an upper section of which containing at least one non-valved inlet opening for admitting working fluid to said space, and a bottom section of which containing a non-valved outlet opening for ejecting the admitted working fluid;

said primary portion including means for introducing a control pressure fluid into said space;

an elastic membrane supported on said primary portion and extending within said space to a level below said inlet opening to form a fluid-tight seal between said primary and secondary portions, said elastic member being cup-shaped and normally in a contracted condition and including:

an inner surface facing said primary portion to be acted upon by control pressure fluid from the latter to expand said membrane, and

an outer surface facing said secondary portion and being spaced therefrom in said contracted condition of said membrane to define a working space therebetween, the depth of said working space between said outer surface of said membrane and said secondary portion progressively increasing from said inlet opening to said outlet opening so that upon expansion of said membrane, said outer surface closes said inlet opening and progressively closes said working space toward said outlet opening to express working fluid therethrough.

4,269,907

ELECTROCHEMICAL CELL

William R. Momyer, Palo Alto, and Ernest L. Littauer, Los Altos Hills, both of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

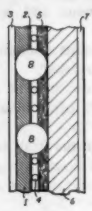
Filed May 5, 1980, Ser. No. 146,498

Int. Cl.[3] **H01M** *2/38*

U.S. Cl. 429—67 **8 Claims**

1. In a reactive metal anode-aqueous electrolyte electro-

chemical cell, an alkali metal anode having an electrically insulating film on its surface and a solid cathode spaced from said anode, said cell characterized by a non-conductive flow screen defining an electrolyte flow channel between said anode



and cathode and being positioned against said anode insulating film and a porous, expandable element, said element being positioned between and contacting said flow screen and said cathode, thereby maintaining contact between said film and screen as the anode is consumed during operation.

4,269,908

BATTERY MOUNTING CHAMBER FOR A POCKET CALCULATOR

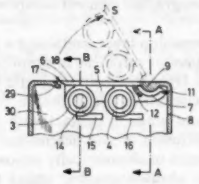
Walter Stemme, Sulzbach, Fed. Rep. of Germany, assignor to Braun AG, Kronberg, Fed. Rep. of Germany

Filed Oct. 26, 1979, Ser. No. 88,668

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1978, 7831842[U]

Int. Cl.³ H01M *2/10*

U.S. Cl. 429—98 **3 Claims**



1. A battery mounting chamber for a pocket calculator characterized by:

(a) a pair of battery insert trays (3, 4) attached to a side surface (5) of an otherwise parallel surfaced support body (6),

(b) a hook-shaped extension (7) on one end of the support body which at least partially fits around a cylindrical pivot face (9) formed on a housing (8), and

(c) the support body extension having a T-shaped cross-section and the free end of the extension having a transverse crossbar (11) engagable with at least one stop tab (12) running crosswise to the support body and integral with the housing, whereby the support body may be rotated out of the housing about the pivot face to expose the trays for battery insertion or removal.

4,269,909

SODIUM-SULFUR CELL WITH METHOD OF CONSTRUCTING THE SULFUR ELECTRODE

Randall N. King, Johnstown, and Stephan P. Mitoff, Clifton Park, both of N.Y., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Jan. 18, 1980, Ser. No. 113,280

Int. Cl.³ H01M *4/36*

U.S. Cl. 429—104 **7 Claims**

1. A sodium sulfur cell including means containing a supply of sodium, an elongated housing joined at one end with said sodium containing means, a beta-alumina electrolyte tube located within and extending from the joined end of said housing so as to define a compartment within said housing around said tube, and a mixture including sulfur and an electrically conductive filler disposed within said compartment, said mixture being provided in said compartment in accordance with a, method comprising: positioning a cover sleeve within the compartment around said electrolyte tube; filling the available space within said compartment between said cover sleeve and

housing with a mixture of sulfur and said solid filler; allowing the sulfur within said compartment to cool and solidify, if not already solid, whereby to provide a solid mixture therein; thereafter, removing said cover sleeve from said compartment leaving an empty space in its place, said empty space surrounding said electrolyte tube; and filling said empty space with electrically conductive filler without sulfur whereby subsequent melting of said solidified sulfur will expand within the entire compartment without exerting a force on said electrolyte tube sufficient to damage the latter.

4,269,910

ELECTROCHEMICAL CELLS HAVING A GELLED ANODE-ELECTROLYTE MIXTURE

Teresita O. Graham, Dobbs Ferry, and John T. Goodman, Croton-on-Hudson, both of N.Y., assignors to Duracell International Inc., Bethel, Conn.

Filed Dec. 26, 1979, Ser. No. 106,996

Int. Cl.³ H01M *6/22*

U.S. Cl. 429—190 **11 Claims**

1. An electrochemical cell comprising an anode, an aqueous alkaline electrolyte solution, a separator and a cathode, said anode comprising an intimate gelled mixture of a powdered metal, aqueous alkaline electrolyte solution and an agent capable of gelling said mixture, said agent comprising a material capable of absorbing water, said agent comprising a carbohydrate backbone having water soluble side chains grafted thereon.

4,269,911

ALUMINUM-HALOGEN CELLS

Masayuki Fukuoka; Tatsumi Arakawa; Muneaki Kimura; Yukihisa Masukawa, and Hidehiko Kobayashi, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 10, 1979, Ser. No. 101,976

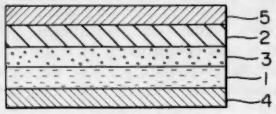
Claims priority, application Japan, Dec. 15, 1978, 53-154190; Dec. 18, 1978, 53-154935; Dec. 21, 1978, 53-156873; Mar. 5, 1979, 54-24517

Int. Cl.³ H01M *6/00*

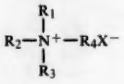
U.S. Cl. 429—199 **16 Claims**

1. An aluminum-halogen cell comprising an anode collector, an anode active material layer of aluminum, a cathode active material layer comprising at least one halogen compound selected from the group consisting of N-halocarboxylic acid amides, copper bromide, lead chloride and cesium iodide, and a cathode collector, said cathode active material layer containing as a stabilizer at least one member selected from the group

consisting of magnesium halides, zinc halides, organic carboxylic acids and their anhydrides, aluminum salts of perhaloid



acids, metallic salts of perhaloid acids in which said metal is more basic than aluminum, and quaternary ammonium salts of the formula:



wherein R_1, R_2, R_3 and R_4 are independently a hydrogen atom or an alkyl group having 1 to 4 carbon atoms; and X is a halogen atom, in an amount of 0.001 to 5.0 moles per mole of the cathode active material.

4,269,912

LEAD STORAGE BATTERY WITH STORED EXPANDER

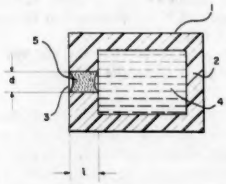
Heinrich Rabenstein; Angela Kalbitz, both of Frankfurt, and Karl H. Kleber, Hofheim, all of Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Dec. 17, 1979, Ser. No. 104,127

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1978, 2855313

Int. Cl.³ H01M *4/56*

U.S. Cl. 429—225 **8 Claims**



1. Lead storage battery containing a reservoir means of expander material wherein

during at least a portion of the useful life of the storage battery a reservoir means of expander material is provided in the electrolyte for delivering the expander progressively into the electrolyte.

4,269,913

NOVEL INORGANIC-ORGANIC COMPOSITE FELT FOR USE IN ALKALINE STORAGE CELLS AND PROCESS FOR MAKING SAME

Hong S. Lim, Agoura, and Scott A. Verzwyvelt, Thousand Oaks, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 23, 1978, Ser. No. 953,523

Int. Cl.³ H01M *2/16*

U.S. Cl. 429—251 **6 Claims**

1. A porous inorganic-organic composite separator for use in alkaline storage batteries prepared by the process of:

a. first providing an aqueous suspension of chopped selected inorganic fibers;

b. transferring said suspension to a chemically inert filter paper placed over a porous suction apparatus and allowing the fibers of said suspension to settle from said suspension thereby forming a randomly oriented fluffy fiber mat;

c. providing a compacting means by placing a second sheet of chemically inert filter paper on top of said suspension meniscus and applying suction to said apparatus whereby the liquid component and air is sequentially pulled through said mat;

d. placing said apparatus containing said mat in an oven whereby said mat is dried;

e. providing a polymer-solvent coating solution by dissolving from 2–10% of an alkali stable polymer in a selected solvent;

f. removing said apparatus from said oven and causing said polymer solution to flow through said mat under suction whereby the fibers of said mat are coated with said solution;

g. flushing said mat with a selected liquid while applying suction to said apparatus to remove said solvent and thereby forming an inorganic-organic composite, consisting of randomly oriented fibers bonded together with an organic polymer, having a multiplicity of pores caused by the flow of said liquid through said mat; and

h. drying said mat at an elevated temperature to remove residual traces of liquid prior to its use as a separator.

4,269,914

ULTRASONOGRAPHIC ELEMENTS CONTAINING MULTIPLE LAYERS AND PROCESSES FOR THEIR USE

Robert E. Bacon, Rochester; Ronald G. Raleigh, Brockport, and Robert B. Rosenfeld, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 16, 1979, Ser. No. 30,665

Int. Cl.³ G03C *1/76, 5/26*

U.S. Cl. 430—3 **16 Claims**

1. In an ultrasonographic element comprising

a support and

a silver halide emulsion layer containing a diffusible densensitizer in an amount sufficient to suppress the response of said emulsion layer to electromagnetic radiation, so that upon imagewise ultrasonic exposure of said ultrasonographic element while in contact with a transport liquid accelerated diffusion of said desensitizer from said emulsion layer occurs in ultrasonically exposed areas, thereby permitting an ultrasonographic image to be formed by exposure to electromagnetic radiation and photographic processing,

the improvement comprising

a second layer capable of receiving and immobilizing said desensitizer and

barrier means interposed between said emulsion layer and said second layer for impeding diffusion of said desensitizer in the absence of ultrasound while permitting diffusion of said desensitizer in the presence of ultrasound.

4,269,915

INFORMATION CARRIER ORIGINAL FOR ZERO ORDER DIFFRACTION PROJECTION

Roland Moraw, Naurod, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 27, 1978, Ser. No. 928,700

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1977, 2734581

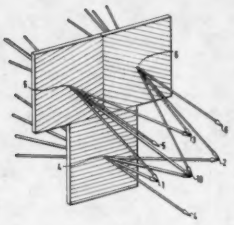
Int. Cl.³ G03C *5/00, 11/00*

U.S. Cl. 430—11 **8 Claims**

1. An original of an information carrier, comprising:

a layer of carrier material; and a recording layer which has been applied to said carrier material and which contains a relief image for reproducing in zero order diffraction color projection an information stored in said relief image, the relief image being composed of a plurality of relief

part-images on the free surface of the recording layer, said relief part-images comprising relief grids having different grid depths of rectangular profile in the areas of the individual relief part-images, said plurality of relief part-images comprising at least four relief part-images adjoining one another without overlapping, and said grid depths of the relief part-images being selected in a manner that the zero order diffraction color projection with polychromatic light provides the colors yellow, red, blue-violet and green.



4,269,916

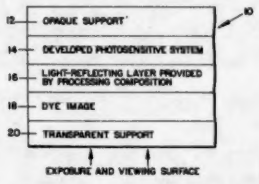
PHOTOGRAPHIC PRINTS UTILIZING LAMELLAR PIGMENT MATERIALS

Ruth C. Bilofsky, Lexington, and Howard G. Rogers, Weston, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 921,186, Jul. 3, 1978, Pat. No. 4,216,018, which is a continuation-in-part of Ser. No. 744,598, Nov. 24, 1976, abandoned. This application May 27, 1980, Ser. No. 153,589

Int. Cl.³ G03C *1/84, 1/78, 1/96*

U.S. Cl. 430—11 **18 Claims**



1. A photographic print comprising a support carrying an image-containing layer which is viewable against a substantially white layer comprising a lamellar pigment dispersed in a matrix material, said lamellar pigment having at least one layer with a geometric thickness of a value with the expression:

$$T = \frac{\lambda}{4}/n \text{ (or an odd multiple thereof)}$$

where: T is the geometric thickness of the layer, λ represents a wavelength or wavelength range of radiation in the visible region of the spectrum, n is the refractive index of the layer material and is at least 1.7, any layer adjacent said one layer having a geometric thickness of a value also within said expression but comprising a layer material having a refractive index different from the refractive index of said one layer.

4,269,917

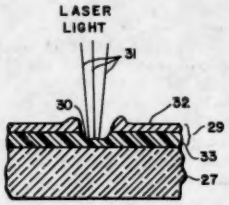
DATA STORAGE MEDIUM HAVING REFLECTIVE PARTICULATE SILVER LAYER

Jerome Drexler, Los Altos Hills, and Eric W. Bouldin, Woodside, both of Calif., assignors to Drexler Technology Corporation, Mountain View, Calif.

Division of Ser. No. 55,270, Jul. 16, 1979. This application Jul. 14, 1980, Ser. No. 168,335

Int. Cl.³ G03C *1/02, 5/32;* **G01D** *15/24, 15/26*

U.S. Cl. 430—16 **17 Claims**



1. A reflective data storage medium comprising,

a low melting temperature colloid matrix supported on a substrate, and

a surface layer of non-filamentary individual silver particles, disposed in said matrix, having maximum particle dimensions primarily under 0.05 microns, some of which are aggregated with similar particles, and having a volume concentration of silver particles greater at said surface than in the interior of said matrix, said surface having an areawise substantially uniform reflectivity to visible light, said uniform reflectivity being between 15% and 75% and being electrically non-conductive.

4,269,918

PROCESS FOR FORMING PATTERNWISE COATED POWDER LAYER

Saburo Nonogaki; Hajime Morishita, both of Tokyo; Shoichi Uchino, Hachioji, and Toshikatsu Manabe, Ome, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 3, 1979, Ser. No. 63,474

Claims priority, application Japan, Aug. 30, 1978, 53-104916

Int. Cl.³ G03C *5/34*

U.S. Cl. 430—28 **16 Claims**

1. a process for forming a patternwise coated powder layer on a substrate surface, which comprises:

(1) a first step of applying to a substrate surface a thin layer of an aromatic diazonium salt or a photosensitive composition containing an aromatic diazonium salt as a photosensitive component capable of becoming sticky due to the formation of a photolytic reaction product of said salt by light exposure,

(2) a second step of subjecting the thin layer to patternwise light exposure, thereby forming the photolytic reaction product in the light-exposed parts and making the light-exposed parts sticky,

(3) a third step of contacting the light-exposed thin layer with powdery grains, thereby making the thin layer accept the powdery grains according to the ability of the sticky light-exposed parts of the thin layer to accept the powdery grains and forming a powder-containing coating layer, and

(4) a fourth step of contacting the powder-containing coating layer with a powdery material which reacts with the

photolytic reaction product of the aromatic diazonium salt to form a water-insoluble non-sticky material or slightly water-soluble non-sticky solid material thereby fixing the powdery grains to the substrate.

4,269,919

INORGANIC PHOTOCONDUCTIVE COATING, ELECTROPHOTOGRAPHIC MEMBER AND SPUTTERING METHOD OF MAKING THE SAME

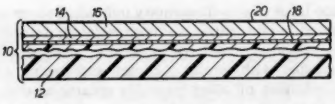
Manfred R. Kuehnle, Lexington, Mass., assignor to Coulter Systems Corporation, Bedford, Mass.

Continuation-in-part of Ser. No. 704,780, Jul. 13, 1976, Pat. No. 4,025,339, Ser. No. 434,699, Jan. 18, 1974, abandoned, Ser. No. 378,180, Jul. 11, 1973, abandoned, Ser. No. 323,132, Jan. 12, 1973, abandoned, and Ser. No. 260,848, Jun. 8, 1972, abandoned, said Ser. No. 704,780, is a continuation of Ser. No. 434,699, , which is a continuation-in-part of Ser. No. 378,180, , which is a continuation-in-part of Ser. No. 323,132, , which is a continuation-in-part of Ser. No. 260,848, , abandoned. This application May 20, 1977, Ser. No. 798,876

The portion of the term of this patent subsequent to Sep. 4, 1996, has been disclaimed.

Int. Cl.[3] **G03G** *5/082; C23C 15/00*

U.S. Cl. 430—67 **55 Claims**



1. A photoconductive coating which comprises a deposit having a thickness between 0.1 micron and about 2 microns upon a planar substrate having the following characteristics:

A. formed of a material which is wholly inorganic and comprises a compound of ultrapurity exclusive of doping, if any, and which when deposited has near perfect stoichiometry,

B. microcrystalline, comprising hexagonal, closely packed crystals about 600 to 800 Angstroms in diameter, with all of the crystals of any particular deposit being the same diameter and all being the same length as the thickness of the coating, of a uniformity that results in the collective exhibition of single crystal configuration in response to electron diffraction testing, the coating thickness and crystal length being equal to the extent of the depletion layer or less, all of the crystals being vertically oriented relative to the substrate,

C. the deposit having a surface layer which is at least chemically different from the remainder of the deposit and includes oxygen in a combined form, which is of the order of 20 to 50 Angstroms thick and has properties differing substantially from those of the remainder of the coating in that it

i. has a surface resistivity of the order of 10^{20} ohms per square irrespective of charge condition and light exposure to give electrical anisotropy and surface resolution for imaging 1000 lines per millimeter and better;

ii. accepts rapid charge at speeds which can be nanoseconds as well as slower, retains charge over long periods of time in darkness under all conditions of charge speed;

iii. accepts charge to a degree enabling toning for excellent grey scale in an absolute surface potential proportional to the thickness of the coating and having a ratio of dark to light resistivity at least of the order of about 10^6 and a dark resistivity of at least 10^{14} ohm centimeters;

D. the crystals of the deposit having multiple boundaries in cross sectional planes of the respective crystals providing, in the bulk of said deposit below the surface layer slight nonuniformities giving rise to additional traps and energy levels for electrons, resulting in increased spectral response when a charged coating is discharged at exposure wavelengths below the band gap energy of the material in addition to discharge above said band gap energy by at least a substantial part of visible light with some dropoff in the red end of the visible spectrum in an absence of doping, and have transverse resistivity in light much less than in darkness,

E. the electronic configuration of the deposit evidencing a nonlinear electric field distribution, with the surface layer acting as an N layer of an NPN semiconductor device, the zone of the deposit immediately adjacent the surface layer having an inordinately high electric field and an excess of immobile positive energy states corresponding to a P layer when the coating is charged, the remaining portion of the said bulk of the deposit below the surface layer and the immediately adjacent zone dropping off rapidly en electric field when compared to that of said zone and hence acting as an N layer, said electronic configuration providing a quantum gain for undoped coating greater than unity for most of the visible spectrum, total dischargeability when illuminated sufficiently, sustaining of the electric field distribution for the entire time of carrier transit, no fatigue after extended use or reuse,

F. the deposit being flexible per se, transparent per se to a degree related to its thickness and being 70 to 85% light transmissive over most of the useful range of thickness, dense to about 95% or better of theoretical maximum for the material, having a glass-hard, smooth, abrasion-resistant surface and being unaffected by moisture or heat below several hundred degrees Celsius and not irreversibly affected by radiation while in uncharged condition.

4,269,920

DRY PROCESS DEVELOPING MATERIAL FOR ELECTROPHOTOGRAPHY

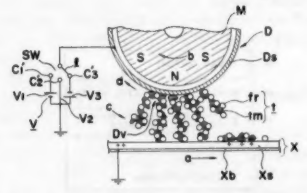
Kenichi Wada; Tateki Oka; Susumu Tanaka, and Kenji Tabuchi, all of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Japan

Filed Sep. 6, 1978, Ser. No. 940,133

Claims priority, application Japan, Sep. 16, 1977, 52-112081

Int. Cl.[3] **G03G** *9/14*

U.S. Cl. 430—107 **5 Claims**



1. A developing material for dry developing an electrostatic latent image which material comprises (a) electrically insulating magnetizable toner particles in the range from 5 to 25 μ-microns having a resistance higher than 10^{13} Ω-cm and comprising resin and magnetizable fine particles, and (b) fine particles of substantially colorless and transparent resin in the range of 0.1 to 30 microns, wherein said fine particles of resin are admixed with said electrically insulating magnetizable toner in an amount of from 1 to 50 weight % with respect to said electrically insulating magnetizable toner;

said fine particles of resin being different from said electrically insulating magnetizable toner in their position on a frictional electrical charging row whereby said electrically insulating magnetizable toner and fine particles of resin are triboelectrically charged respectively to opposite polarities to each other through frictional contact therebetween, and said toner, as a result of said frictional contact with said fine particles, having a polarity opposite that of said electrostatic latent image;

said electrically insulating magnetizable toner and said fine particles being mixed to form said developing material.

4,269,921

METHOD FOR PREVENTING DEGRADATION OF A LIQUID DEVELOPER FOR ELECTROSTATIC RECORDING

Hiroshi Tanaka, Tokyo, and Terukuni Tsuneda, Matsudo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 822,339, Aug. 5, 1977, which is a continuation of Ser. No. 555,088, Mar. 4, 1975, abandoned. This application Mar. 12, 1979, Ser. No. 19,568

Claims priority, application Japan, Mar. 8, 1974, 49/27616

Int. Cl.[3] G03G *13/22, 13/14*

U.S. Cl. 430—119 **2 Claims**

1. In an electrophotographic process including the steps of

(a) developing an electrostatic latent image on a support by contacting said latent image with a negatively-charged liquid developer comprising toner particles dispersed in a highly insulating carrier liquid to thereby form a toner image on said support in said carrier liquid;

(b) transferring said toner image onto a sized transfer paper in the presence of said carrier liquid by contacting said toner image with said transfer paper and applying an electric field thereto;

(c) recovering and combining any nontransferred liquid developer remaining on said support with the liquid developer employed in step (a) for reuse in subsequent developing steps; and

(d) repeating steps (a)–(c);

wherein the improvement comprises suppressing the accelerated deterioration of the liquid developer during such repeated use by using a sized transfer paper which (1) has no electrically-conductive coating thereon, (2) does not cause the elution of substantial amounts of rosin aluminum soap into said nontransferred liquid developer during said transferring step (b) and (3) is selected from the group consisting of alkylketene dimer, sodium salt of carboxymethylcellulose, waxes, petroleum resin, reaction products of terpene resin with acrylonitrile, organic silicon compounds, asphalt emulsion, pitch, hydrophobic polyfunctional amine salt, algin, alkylene imine resin, cyclic petroleum oil, cyclic dicarboxylic acid anhydride, reaction products of a monocarboxylic acid with a dialkanolamine or trialkanolamine, condensates of alkylamine with methylene-bis-acrylamide, tall oil, hydrogenated tall oil, maleic tall oil, saponified dodecenyl succinic anhydride, modified petroleum resin, a mixture of hydrogenated animal fat or casein with aqueous ammonia or sodium hydroxide, condensates of epichlorohydrin with aliphatic primary amine, and hardened fatty acid soap.

4,269,922

POSITIVE TONERS CONTAINING LONG CHAIN HYDRAZINIUM COMPOUNDS

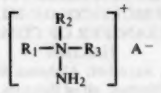
Chin H. Lu, and Peter F. Erhardt, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 12, 1979, Ser. No. 19,695

Int. Cl.[3] G03G *13/16*

U.S. Cl. 430—126 **7 Claims**

1. A method of imaging comprising forming an electrostatic latent image on a photoreceptor, contacting the image with positively charged developer comprising a positively charged resin material, a colorant or pigment, a negatively charged carrier, and a long chain hydrazinium charge inducing compound of the following formula, which compound is blended into the resin material or coated on the pigment in an amount of from about 0.1 weight percent to about 10 weight percent:



wherein R_1 is a hydrocarbon radical containing from 8 to 22 carbon atoms, R_2 and R_3 are independently selected from hydrogen or hydrocarbon radical containing from 1 to 22 carbon atoms, and A is an anion selected from halides, sulfate, sulphonate, phosphate and nitrate, subsequently transferring the developed latent image to a substrate, and permanently affixing the image thereto.

4,269,923

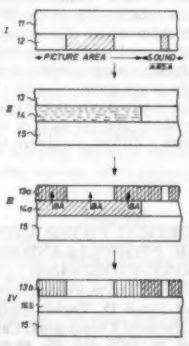
PHOTOGRAPHIC IMAGING PROCESS AND MATERIALS SUITABLE THEREFOR

Raymond A. Roosen, 's-Gravenwezel; Robert J. Pollet, Vremde, and Antoon L. Vandenberghe, Hove, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Jan. 22, 1980, Ser. No. 114,296

Int. Cl.[3] G03C *7/24*

U.S. Cl. 430—140 **19 Claims**



1. A process wherein a photographic silver image is formed in at least one hydrophilic colloid layer called "silver-imaging layer" of a light-sensitive photographic material incorporating silver halide, by means of exposure and alkaline development steps, followed by bleaching of quantities of silver which are present in areas of said layer extraneous to those where imaging silver is required, characterized in that a non-diffusible silver bleach inhibitor is initially present in said silver-imaging layer or is released therein during processing of the material but before bleaching, to prevent bleaching of the required imaging silver in such layer in the bleaching step and in that the prevention of the bleaching of the silver by the bleach inhibitor in the areas extraneous to those where imaging silver is required is counteracted by the presence in the corresponding areas of such layer of a bleach accelerator which is caused to define into such areas from an adjacent hydrophilic colloid layer called "accelerator release layer" during the development processing of the material.

4,269,924
PHOTOGRAPHIC MATERIAL SUITED FOR THE PRODUCTION OF MULTICOLOR IMAGES BY MEANS OF DIFFUSION TRANSFER OF COMPLEXED SILVER HALIDE

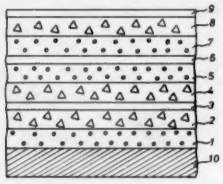
Wilhelmus Janssens, Aarschot; Alphonse Somers, Edegem, and Daniël A. Claeys, Mortsel, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Jan. 25, 1979, Ser. No. 6,487

Claims priority, application United Kingdom, Jan. 27, 1978, 3434/78

Int. Cl.³ G03C *1/40, 1/10, 1/76*

U.S. Cl. 430—214 **10 Claims**



1. A photographic material comprising a support having thereon at least three differently spectrally sensitive silver halide emulsion layers that are each sensitive to light of a different additive primary colour, and associated with each such silver halide emulsion layer a silver-precipitating layer containing development nuclei and a different dye- or dye precursor-releasing compound for producing a subtractive multi-colour image, wherein (1) each of the silver halide emulsion layers is on one side contiguous to its associated silver-precipitating layer but on its opposite side is not contiguous to another such silver precipitating layer, (2) two of said differently spectrally sensitive silver halide emulsion layers are arranged in contiguous relationship or are arranged with an interlayer in between them which is penetrable by diffusing silver complexes, and two of said silver-precipitating layers containing different dye-releasing compounds are arranged in contiguous relationship or are arranged with a non-light-sensitive, non-dye-releasing water-permeable hydrophilic colloid interlayer in between them, and (3) each of the silver halide emulsion layers contains a diffusion-resistant silver halide developing agent.

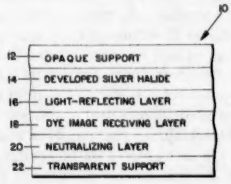
4,269,925
POLYMERIC OPTICAL FILTER AGENTS AND PHOTOGRAPHIC PRODUCTS AND PROCESSES CONTAINING SAME

Derek H. R. Barton, Gif-sur Yvette, France; Irena Y. Bronstein-Bonte, Newton, and Lloyd D. Taylor, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 29, 1979, Ser. No. 89,558

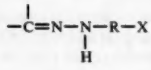
Int. Cl.³ G03C *1/40, 1/84, 5/54, 1/10*

U.S. Cl. 430—215 **71 Claims**

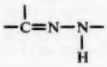


12. A photographic film unit for forming a diffusion transfer image which comprise in combination:

a photosensitive element comprising an opaque support carrying at least one photosensitive silver halide emulsion layer, each said silver halide emulsion layer having associated therewith a dye image-forming material; an image-receiving element comprising a transparent support carrying at least a polymeric image-receiving layer dyeable by said dye image-forming material, said image-receiving element being adapted to exposure therethrough of said photosensitive element and being in a superposed fixed relation to said photosensitive element with said supports outermost; a rupturable container releasably holding an aqueous alkaline processing composition, said rupturable container being positioned so as to release said processing composition for distribution between said dyeable polymeric layer and said photosensitive element adjacent thereto upon application of pressure to said container after photoexposure of said photosensitive element; and disposed in said film unit in said processing composition and/or in a layer intermediate said photosensitive element and said image-receiving element, a polymeric optical filter agent having a light-absorbing capability at a pH above the pKa of the optical filter agent effective to absorb at least a portion of actinic radiation within a predetermined range, said polymeric optical filter agent having attached directly or indirectly to the backbone thereof the following hydrazone moiety:



where R is a group which provides a carbon-to-carbon double bond for conjugation with the



portion of the moiety to provide said light-absorbing capability for the moiety at a pH above the pKa of the moiety and X represents a substituent of R providing at least one electron-withdrawing group.

4,269,926
STABILIZATION OF ORGANIC SUBSTRATE MATERIALS INCLUDING PHOTOGRAPHIC DYE IMAGES AGAINST THE ACTION OF LIGHT

Hiroshi Hara, Asaka; Kotaro Nakamura, and Yoshiaki Suzuki, both of Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

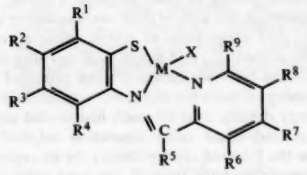
Division of Ser. No. 29,085, Apr. 11, 1979. This application May 15, 1980, Ser. No. 150,023

Claims priority, application Japan, Apr. 17, 1978, 53/45063

Int. Cl.³ G03C *1/40, 1/84, 1/10*

U.S. Cl. 430—216 **2 Claims**

1. A diffusion transfer color photographic material comprising a photosensitive element and an image-receiving element, said image-receiving element comprising a support having thereon a mordanting layer containing a complex of the formula (I):



(I)

wherein M represents a Cu, Co, Ni, Pd or Pt atom; R^1, R^2, R^3, R^4, R^6, R^7, R^8 and R^9 each represents a hydrogen atom, a halogen atom, a cyano group, an alkyl group, an aryl group, a cycloalkyl group or a heterocyclic ring which may be attached to the carbon atom on its respective ring directly or indirectly via a divalent coupling group, or R^1 and R^2, R^2 and R^3, R^3 and R^4, R^6 and R^7, R^7 and R^8, or R^8 and R^9 combine to represent the non-metallic atoms necessary to complete a 6-membered ring; R^5 represents a hydrogen atom, an alkyl group or an aryl group; and X represents a chlorine atom, a bromine atom or an iodine atom.

4,269,927

INTERNALLY DOPED SURFACE SENSITIZED HIGH CHLORIDE SILVER HALIDE EMULSIONS AND PHOTOGRAHIC ELEMENTS AND PROCESSES FOR THEIR PREPARATION

Robert E. Atwell, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 27,325, Apr. 25, 1979, abandoned. This application Jul. 16, 1980, Ser. No. 169,241

Int. Cl.³ G03C *1/28*

U.S. Cl. 430—217 **35 Claims**

1. A negative-working silver halide emulsion of the developing out type comprised of silver halide grains which are capable of producing surface latent image sites and which are at least 80 mole percent silver chloride and less than 5 mole percent silver iodide, based on total silver halide, said silver halide grains being internally doped with cadmium, lead, copper, zinc, or mixtures thereof in a speed increasing amount of up to 7×10^{-5} mole per mole of silver halide.

4,269,928

PROCESS FOR THE PRODUCTION OF PHOTOGRAPHIC IMAGES BY DYE DIFFUSION TRANSFER AND PHOTOGRAPHIC MATERIAL SUITABLE IN THIS PROCESS

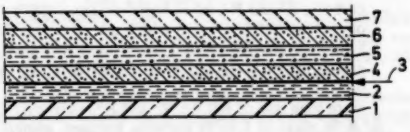
Leslie F. A. Mason, Brentwood; Rainer Kitzing, Ingatestone; Brian R. D. Whitear, Brentwood; William E. Long, Brentwood; Glenn P. Wood, Brentwood, and David L. R. Reeves, Brentwood, all of England, assignors to Ciba-Geigy Aktiengesellschaft, Basel, Switzerland

Filed Feb. 23, 1979, Ser. No. 14,776

Claims priority, application United Kingdom, Feb. 28, 1978, 7789/78; Oct. 13, 1978, 40401/78; Oct. 30, 1978, 42414/78; Nov. 20, 1978, 45305/78

Int. Cl.³ G03C *5/54, 7/00, 1/40, 1/10*

U.S. Cl. 430—239 **61 Claims**



1. A process for the production of a photographic image by use of silver halide material which comprises the steps:

(a) imagewise exposing a photographic assembly which comprises at least during the silver halide developing step, in order, at least one silver halide emulsion layer, a dye mordant layer and a support base, there being associated with the silver halide emulsion layer a compound of the general formula

D—E—F—BAL (I)

where D is a group which contains the residue of a diffusible dye, BAL is ballasting group, D and E being joined by any type of chemical bond and E and F represent an azo, hydrazo, imino or amino bridging group which links D and BAL and which has a reduction potential above −200 mV measured against a standard hydrogen electrode at a pH of less than 3 and which bond can be reductively cleaved at a pH of less than 3 by a reducing agent which is able to act at a pH below 3,

(b) processing the exposed assembly to develop the latent image in the silver halide emulsion layer(s),

(c) and simultaneously or subsequently producing an imagewise distribution of a reducing agent in an aqueous acid medium having a pH below 3 and reductively cleaving the E–F bond of the compound of formula (I) thereby liberating a diffusible dye imagewise,

(d) Allowing or causing the diffusible dye to diffuse to the dye mordant layer

(e) and there to mordant the dye to form a dye image having a peak absorption within the range of 300–800 nm.

4,269,929

HIGH CONTRAST DEVELOPMENT OF PHOTOGRAPHIC ELEMENTS

Ronald J. Nothnagle, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 14, 1980, Ser. No. 112,249

Int. Cl.³ G03C *5/30*

U.S. Cl. 430—264 **25 Claims**

1. A method for high contrast development of a photographic element comprising at least one silver halide emulsion layer, which method comprises contacting said element in the presence of a hydrazine compound with an aqueous alkaline developing solution which has a pH of above 10 and below 12 and contains a dihydroxybenzene developing agent, a 3-pyrazolidone developing agent, a sulfite preservative, and a contrast-promoting amount of an amino compound.

4,269,930

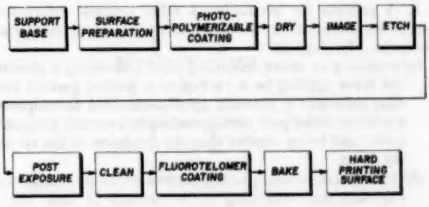
PHOTOPOLYMERIC COMPOSITION CONTAINING POLYAMIDE AND DICARBOXYLIC ACID DIESTER

David R. Kress, Rochester, N.Y., assignor to Matrix Unlimited, Inc., Rochester, N.Y.

Filed Nov. 13, 1979, Ser. No. 93,622

Int. Cl.³ G03C *1/68*

U.S. Cl. 430—270 **2 Claims**



1. A photopolymerizable composition of matter comprising a mixture of:

(a) from about 70–95% by weight of an alcohol-soluble linear polyamide;

(b) from about 0.5–15% by weight of a low molecular weight dicarboxylic acid diester selected from the group

consisting of saturated and unsaturated dicarboxylic acid diesters having up to eight carbon atoms in the acid backbone and up to about four carbon atoms in the alcohol moiety appended at the ester linkage; and,

(c) an effective amount of at least one photosensitizer and at least one polymerization inhibitor.

4,269,931

SUPPORTS FOR PRINTING PLATES

Kazuyoshi Suzuki; Teruo Takahashi; Tadashi Shingu, all of Hino; Kiyomi Naka, Kokubunji, and Akihiro Horike, Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 882,099, Mar. 1, 1978, abandoned. This application Dec. 17, 1979, Ser. No. 104,279

Claims priority, application Japan, Mar. 8, 1977, 52-24354

Int. Cl.³ G03C *1/68*

U.S. Cl. 430—271 **25 Claims**

1. In a support for use in making a printing plate using a liquid photosensitive resin selected from the group consisting of polyester resin, polyurethane resin and mixtures thereof, the support comprising (A) a base plate, (B) an adhesive layer formed on the surface of the base plate, and (C) an activating layer formed on the surface of the adhesive layer; the improvement wherein the activating layer (C) comprises as an activating agent a phosphorus compound (a) selected from the group consisting of tertiary phosphite compound (a-i) and tertiary phosphine compound (a-ii) in an amount of about 10–100 weight percent and having a thickness of 0.1–50 microns.

4,269,932

PROCESS FOR PREPARING AN ORIGINAL INFORMATION CARRIER FOR ZERO-ORDER DIFFRACTION

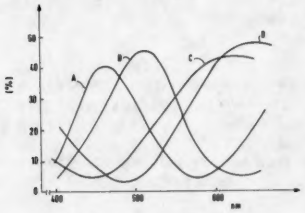
Roland Moraw, and Renate Schädlich, both of Naurod, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 27, 1978, Ser. No. 928,701

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1977, 2734580

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—290 **6 Claims**



1. A process for producing a relief original information carrier for use in zero order diffraction color projection which comprises the steps of:

(a) exposing an entire recording layer containing a photoresist layer applied on a carrier to a grating pattern for a time sufficient to provide, upon subsequent development, a uniform relief path corresponding to a certain projection color, and being smaller than the thickness of the recording layer,

(b) subsequent to said grating pattern exposure, image-wise exposing said recording layer through at least one of individual color separation originals to form at least one relief part-image corresponding to a different projection color, each of said color separation originals being transparent in the areas of the particular projection colors of the individual color separation originals, each of said relief part-images of the projection color adjoining one another without overlap and having a depth different than said uniform relief depth and different from those relief part-images corresponding to other projection colors, which are transparent in the area of their corresponding projection color, part-image areas of which adjoining one another without overlap,) said image-wise exposing through each individual color separation original provided with a different energy density for each color separation original,

(c) said energy density used for each image-wise exposing through an individual color separation original being lower than the required energy density for an exposure of a similar recording layer through the same color separation original without a preceding grating exposure, to obtain the required projection color, and

(d) developing said exposed recording layer.

4,269,933

METHODS OF DEVELOPING PHOTOPOLYMERIZABLE COMPOSITIONS CONTAINING AN o-NITROAROMATIC COMPOUND AS PHOTOINHIBITOR

José F. Pazos, Claymont, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 913,906, Jun. 8, 1978, Pat. No. 4,198,242, which is a continuation-in-part of Ser. No. 758,699, Jan. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 667,536, Mar. 17, 1976, abandoned. This application Sep. 28, 1979, Ser. No. 80,082

Int. Cl.³ G03C *5/00*

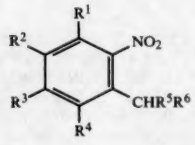
U.S. Cl. 430—291 **17 Claims**

1. Method of making a positive polymeric image on a substrate which comprises

(1) coating the substrate with the photopolymerizable coating composition in which the photopolymerizable and photosensitive components consist essentially of

(a) normally nongaseous, ethylenically unsaturated compound selected from the group consisting of unsaturated esters of polyols, unsaturated amides, vinyl esters and unsaturated aldehydes capable of addition polymerization by free-radical initiated chain propagation,

(b) 0.004 to 0.7 part by weight, per part of component (a), of nitroaromatic compound of the formula



wherein

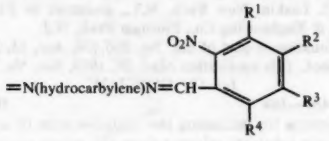
R^1, R^2, R^3 and R^4, alike or different, are H, OH, halogen, NO_2, CN, alkyl of 1 to 18 carbons, alkoxy in which the alkyl is of 1 to 18 carbons, acyloxy of 2–7 carbons, aryl of 6 to 18 carbons, benzyl, halogen-substituted phenyl, polyether of 2 to 18 carbons and 2 to 10 oxygens, dialkylamino in which each alkyl is of 1 to 18 carbons, thioalkyl in which the alkyl is of 1 to 18 carbons, or thioaryl in which the aryl is of 6 to 18 carbons, R^2 and R^3, taken together, are $—OCH_2O—$ or $—O—CH_2CH_2O—_q$ in which q is an integer from 1 to 5, or any two of R^1, R^2, R^3 and R^4, taken together, are the residue of a second benzene ring fused onto the benzene nucleus, with the proviso that not more than one of R^1, R^2, R^3 and R^4 is OH or NO_2,

R^5 is H, alkyl of 1 to 18 carbons, halogen, phenyl, or alkoxy in which the alkyl is of 1 to 18 carbons,

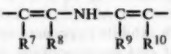
R^6 is H, OH, alkyl of 1 to 18 carbons, phenyl, alkoxy in which the alkyl is of 1 to 18 carbons, or aryloxy of 6 to 18 carbons unsubstituted or substituted with halogen, alkyl of 1 to 6 carbons, or alkoxy of 1 to 6 car-

bons, with the proviso that only one of R^5 and R^6 is H, or

R^5 and R^6 taken together are =O, $=CH_2$, $-O-CH_2-$, $=NC_6H_5$, $=NC_6H_4N(alkyl)_2$ in which each alkyl is of 1 to 18 carbons, $-O-C_2H_4-O-$, =N(alkyl) in which the alkyl is of 1 to 6 carbons,



in which the hydrocarbylene group is of 1 to 18 carbons, or



in which R^8 and R^9, alike or different, are H or alkyl of 1 to 4 carbons, and R^7 and R^{10}, alike or different, are —CN, $-COR^{11}$ in which R^{11} is alkyl of 1 to 5 carbons, or $-COOR^{12}$ in which R^{12} is alkyl of 1 to 6 carbons which may be interrupted by an oxygen atom, alkenyl of 2 to 5 carbons, or alkynyl of 2 to 5 carbons, or R^7 and R^8 together, or R^9 and R^{10} together, complete a 6-membered carbocyclic ring containing a keto group, and

(c) 0.001 to 10 parts by weight, per part of component (a), of an organic, radiation-sensitive, free-radical generating system, activatable by actinic radiation that does not significantly rearrange the nitroaromatic compound to an inhibitor of free-radical polymerization,

(2) imagewise exposing a portion of the photopolymerizable coating through an image-bearing transparency to radiation at least 20% of which has a wavelength of 200 to 380 nm, thereby rearranging at least some of the nitroaromatic compound to polymerization inhibiting nitroso-aromatic compound, and

(3) subjecting the coating to a second exposure whereby a greater portion of the coating, including the portion exposed during the imagewise exposure, is exposed to radiation substantially limited to wavelengths greater than 380 nm, whereby a positive polymeric image is formed in the areas exposed during the second exposure but not exposed during the imagewise exposure.

4,269,934

TIN OXIDE, CADMIUM CHLORIDE DOPED SILVER CHLORIDE ELECTRON BEAM RECORDING MEDIUM

Nicholas F. Borrelli, Elmira, and Peter L. Young, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Oct. 22, 1979, Ser. No. 86,829
Int. Cl.³ G03C *1/72, 1/733*
U.S. Cl. 430—296 **10 Claims**

1. An electron beam recording medium comprising a supported polycrystalline film containing cadmium chloride-doped silver chloride in combination with tin oxide.

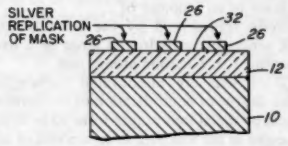
6. A method for making an optical mask which comprises the step of selectively darkening portions of a polycrystalline film containing cadmium chloride-doped silver chloride in combination with tin oxide by exposing said portions to an electron beam for a time sufficient to obtain an optical contrast ratio of at least about 3 between the selectively darkened portions of the film and the undarkened portions thereof.

4,269,935

PROCESS OF DOPING SILVER IMAGE IN CHALCOGENIDE LAYER

Joseph I. Masters, Cambridge, and Gershon M. Goldberg, Arlington, both of Mass., assignors to Ionomet Company, Inc., Brighton, Mass.

Continuation-in-part of Ser. No. 57,183, Jul. 13, 1979, abandoned. This application Oct. 17, 1979, Ser. No. 86,198
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—323 **8 Claims**



1. In a process employing a chalcogenide glass to delineate a pattern, the steps of:

(a) distributing a silver halide deposit over the outer surface of the chalcogenide glass;

(b) exposing portions of said silver halide deposit to a pattern of actinic radiation on said silver halide deposit to produce a latent image corresponding to a desired pattern in said silver halide deposit;

(c) photographically processing said latent image to form a metallic silver replication of said pattern; and

(d) causing said metallic silver replication to penetrate into the surface of said chalcogenide glass to dope with silver the immediately-underlying surface of said chalcogenide glass.

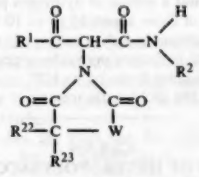
4,269,936

PROCESS OF FORMING YELLOW PHOTOGRAPHIC IMAGES

Atsuaki Arai; Yasushi Oishi; Kiyoshi Nakazyo; Atsushi Sugizaki, and Akio Okumura, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 29, 1972, Ser. No. 319,806
Claims priority, application Japan, Dec. 28, 1971, 47-3039
Int. Cl.³ G03C *1/40*
U.S. Cl. 430—389 **25 Claims**

1. A method for forming dye images comprising exposing and processing a silver halide photographic emulsion with an aromatic primary amino developing agent in the presence of a yellow dye-forming coupler represented by the following formula:



wherein R^1 represents an aryl group; R^2 represents an aryl group or a heterocyclic group; W represents an oxygen atom or a sulfur atom; and R^{22} and R^{23}, which may be the same or different, each represents a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, an aryl group, an arvloxy group, a sulfo group or a carboxyl group.

4,269,937

PHOTOGRAPHIC POLYOLEFIN COATED PAPER BASES WITH IONOMER LAYER

Yoshimasa Asanuma, and Taiichi Nishimura, both of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Minamiashigara, Japan

Filed Jun. 25, 1979, Ser. No. 52,047
Claims priority, application Japan, Jun. 23, 1978, 53-76161
Int. Cl.³ G03C *1/86*
U.S. Cl. 430—538 **11 Claims**

1. In a base for a photographic light-sensitive material comprising a polyolefin coated paper, the improvement which comprises a layer of an ionomer of

(a) an α-olefin represented by the formula $RCH{=}CH_2$, where R represents a hydrogen atom or a hydrocarbon group having 1 to 8 carbon atoms, and

(b) an α,β-ethylenically unsaturated carboxylic acid in which the degree of neutralization of the carboxyl groups in said acid by metal ions ranges from 20 to 90%, said acid being present in the ionomer in an amount of about 0.2 to 40 mol%,

between the surface of the paper and the polyolefin coating.

4,269,938

ASSAY OF PEROXIDATIVELY ACTIVE MATERIALS

David S. Frank, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 8, 1979, Ser. No. 18,532
Int. Cl.³ G01N *31/14*; C09K *3/00*; G01N *31/22*
U.S. Cl. 435—7 **41 Claims**

1. A composition useful for the determination of a substance having peroxidative activity, said composition, consisting essentially of diacetyldichlorofluorescin and a source of hydrogen peroxide in a concentration of from about 10^{-6} to 10^{-2} M, the ratio of diacetyldichlorofluorescin to hydrogen peroxide or generated hydrogen peroxide ranging from 1:5 to 1:100.

19. A method for assaying peroxidase comprising the steps of

(a) contacting a substantially dry element comprising a reagent having a composition consisting essentially of diacetyldichlorofluorescin and a dry source of hydrogen peroxide at a concentration of from about 10^{-6} to 10^{-2} M with a sample for analysis, the ratio of diacetyldichlorofluorescin to generated hydrogen peroxide ranging from 1:5 to 1:100; and

(b) detecting the dichlorofluorescein resulting from said contact.

41. A method of assaying for antigen or antibody present in a sample to be tested comprising:

(a) labeling a known amount of antigen or antibody with peroxidase and adding said labeled antigen or antibody with said sample to be tested to a known amount of corresponding antigen or antibody; and

(b) determining the amount of unknown antigen or antibody by

(i) contacting in an aqueous medium the mixture of (a) and a composition consisting essentially of diacetyldichlorofluorescin and a source of hydrogen peroxide at a concentration of from about 10^{-6} to 10^{-2} M to produce dichlorofluorescein, the ratio of diacetyldichlorofluorescin to hydrogen peroxide or generated hydrogen peroxide ranging from 1:5 to 1:00;

(ii) detecting the dichlorofluorescein.

4,269,939

PREPARATION OF HETEROPOLYSACCHARIDE S-119

Kenneth S. Kang, La Jolla; George T. Veeder, and Peter J. Mirrasoul, both of San Diego, all of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 20, 1980, Ser. No. 161,619
Int. Cl.³ C12P *19/06*
U.S. Cl. 435—104 **4 Claims**

1. A process for producing heteropolysaccharide S-119 which comprises growing a variant strain of Agrobacterium radiobacter, ATCC 31643 in an aqueous nutrient medium by aerobic fermentation of an assimilable carbon source and recovering said heteropolysaccharide S-119.

4,269,940

MICROBIOLOGICAL ALKANE OXIDATION PROCESS

Ramesh N. Patel; Ching-Tsang Hou, both of Edison, N.J., and Allen I. Laskin, New York, N.Y., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 896,476, Apr. 14, 1978, abandoned. This application Mar. 27, 1979, Ser. No. 24,306
Int. Cl.³ C12P *7/26*
U.S. Cl. 435—148 **10 Claims**

1. A process for increasing the oxidative state of an oxidizable organic substrate selected from the group consisting of C_1–C_2 alkanes to the corresponding alcohols, C_3–C_6 alkanes to the corresponding 1- and 2- alkanols and methyl ketones which comprises: oxidizing said oxidizable substrate under aerobic conditions, in the presence of cells of a bacterial methylotrophic microorganism or an enzyme preparation prepared from said cells which exhibits oxygenase enzyme activity until at least a portion of said corresponding oxidized product is produced in isolatable amounts, wherein said microorganisms have been aerobically grown in a nutrient medium containing methane which provides the carbon and energy source for growth of the cells and induces oxygenase enzyme activity in said cells and said microorganisms are methane-utilizing microorganism strains selected from the group consisting of:

Methylosinum trichosporium—(CRL 15 PM1)—NRRL B-11,202

Methylosinus sporium—(CRL 16 PM2)—NRRL B-11,203

Methylocystis parvus—(CRL 18 PM4)—NRRL B-11,204

Methylomonas methanica—(CRL M4P)—NRRL B-11,205

Methylomonas methanica—(CRL 21 PM7)—NRRL B-11,206

Methylomonas albus—(CRL M8Y)—NRRL B-11,207

Methylomonas streptobacterium—(CRL 17 PM3)—NRRL B-11,208

Methylomonas agile—(CRL 22 PM9)—NRRL B-11,209

Methylomonas rubrum—(CRL M6P)—NRRL B-11,210

Methylomonas rubrum—(CRL 20 PM6)—NRRL B-11,211

Methylomonas rosaceus—(CRL M1OP)—NRRL B-11,212

Methylomonas rosaceus—(CRL M7P)—NRRL B-11,213

Methylobacter chroococcum—(CRL M6)—NRRL B-11,214

Methylobacter chroococcum—(CRL 23 PM8)—NRRL B-11,215

Methylobacter bovis—(CRL M1Y)—NRRL B-11,216

Methylobacter bovis—(CRL 19 PM5)—NRRL B-11,217

Methylobacter vinelandii—(CRL M5Y)—NRRL B-11,218

Methylococcus capsulatus—(CRL M1)—NRRL B-11,219

Methylococcus minimus—(CRL 24 PM12)—NRRL B-11,220

Methylococcus capsulatus—(CRL 25 PM13)—NRRL B-11,221

Methylobacterium organophilum—(CRL 26 R6)—NRRL B-11,222

and mutants thereof.

4,269,941

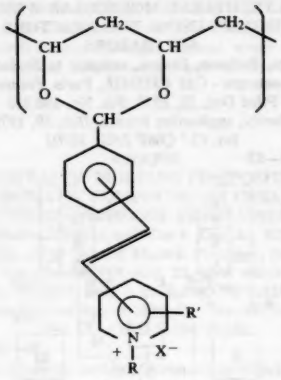
METHOD FOR ENZYME IMMOBILIZATION

Kunihiro Ichimura, Yokohama, Japan, assignor to Agency of Industrial Science and Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

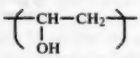
Filed Jul. 31, 1979, Ser. No. 62,486
Claims priority, application Japan, Aug. 9, 1978, 53/96804
Int. Cl.³ C12N *11/04*
U.S. Cl. 435—182 **8 Claims**

1. A method for the immobilization of an enzyme, which comprises:

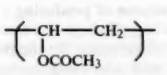
dissolving in water a photo-crosslinking resin having a polymerization degree of 300 to 4000, consisting of 0.1 to 10.0 mol% of a unit containing a crosslinking group of the formula:



wherein, R represents one member selected from the group consisting of a hydrogen atom, an alkyl group, a hydroxy-alkyl group and an aralkyl group, R′ represents one member selected from the group consisting of a hydrogen atom and an alkyl group, and X^- represents a strongly acidic anion, 70.0 to 99.0 mol% of a unit containing a hydroxyl group of the formula:



and 0.1 to 30.0 mol% of a unit containing an acetyl group of the formula:



adding the enzyme to the resultant aqueous solution containing the photo-crosslinking resin, and

exposing the enzyme-containing resin to light to induce a crosslinking reaction of the photo-crosslinking resin and produce a polymer containing the enzyme entrapped therein,

wherein the concentration of the photo-crosslinking resin in water is 1–40% by weight.

4,269,942

PROCESS FOR PREPARING ACYL-COA SYNTHETASE LCF-18

Hideaki Yamada; Sakayu Shimizu, and Yoshiki Tani, all of Kyoto, Japan, assignors to Amano Pharmaceutical Co. Ltd., Nagoya, Japan

Continuation-in-part of Ser. No. 28,604, Apr. 9, 1979, Pat. No. 4,229,538. This application Mar. 20, 1980, Ser. No. 132,177

Claims priority, application Japan, May 15, 1978, 53-056604; Jan. 26, 1979, 54-007244

Int. Cl.³ C12N *9/10*

U.S. Cl. 435—193 **1 Claim**

1. A process for preparing acyl-CoA synthetase LCF-18, comprising cultivating *Pseudomonas aeruginosa* IFO 3919 in a medium under aerobic conditions until a substantial amount of acyl-CoA synthetase LCF-18 is accumulated in the cells, and then isolating acyl-CoA synthetase LCF-18 from the thus cultured cells.

4,269,943

THERMALLY STABLE RESINS PREPARED BY BROMINATION OR CHLORINATION OF AROMATIC POLYMER BEADS FOLLOWED BY SULPHONATION

Charles R. Costin, Jenkintown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Aug. 23, 1979, Ser. No. 69,039

Int. Cl.³ C08F *8/22, 8/36*

U.S. Cl. 521—33 **10 Claims**

1. A process for producing a strong acid cation exchange resin having enhanced thermal stability comprising the steps of (1) chlorinating or brominating the aromatic nuclei of polymer beads, said chlorine or said bromine being introduced onto said aromatic nuclei in an amount of from about 8% to about 25% based on the weight of the polymer, said polymer beads being prepared from a monomer system consisting essentially of (a) from about 50% to about 96%, based on the total weight of the monomers present, of a monovinyl aromatic monomer, the balance being a polyvinyl aromatic monomer and (b) the monomers of (a) with up to about 5% by weight of the polymer of a monomer selected from the class consisting of acrylonitrile, methyl acrylate, methyl methacrylate, and mixtures thereof, and (2) sulfonating the chlorinated or brominated polymer beads whereby the resultant cation exchange resin exhibits enhanced thermal stability.

4,269,944

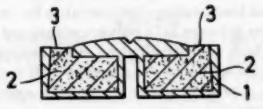
COMPOSITION FOR FORMING AN INTUMESCENT MATERIAL

Cyril A. Redfarn, London, England, assignor to Dixon International Limited, Pampisford, England

Continuation-in-part of Ser. No. 874,513, Feb. 2, 1978, Pat. No. 4,210,725. This application May 16, 1980, Ser. No. 150,426

Int. Cl.³ C08J *9/00*

U.S. Cl. 521—100 **12 Claims**



1. An intumescent material upon heating decomposes into gas and a solid foam residue comprising:

cured hydrophobic melamine formaldehyde resin in which the curing agent is selected from the group consisting of guanidine and dicyandiamide;

a hydrated inorganic setting agent, said setting agent having chemically absorbed water to make the intumescent material coherent;

an ammonium phosphate;

polyvinyl acetate;

a polyhydroxy compound; and

reinforcing fibrous material.

4,269,945

REACTION INJECTION MOLDED POLYURETHANES EMPLOYING ALIPHATIC AMINE CHAIN EXTENDERS

James A. Vanderhider, Lake Jackson, and Gerald M. Lancaster, Surfside, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 24, 1980, Ser. No. 114,803

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—159 **5 Claims**

1. In a process for preparing RIM urethane systems which systems employ a composition which comprises (A) a relatively high molecular weight hydroxyl-containing polyol, (B) a chain extender and (C) a polyisocyanate, a polyisothiocyanate or mixture thereof; the improvement which comprises employing as the chain extender, component (B), a mixture comprising

(1) at least one member selected from the group consisting of
(a) hydroxyl-containing materials which are essentially free of aliphatic amine hydrogen atoms, have an average OH functionality of from about 2 to about 4 and have an average OH equivalent weight of from about 30 to about 120 and
(b) aromatic amine-containing materials which are essentially free of aliphatic amine hydrogen atoms and which contain at least two aromatic amine hydrogen atoms and
(2) at least one aliphatic amine-containing material having at least one primary amine group, an average aliphatic amine hydrogen functionality of from about 2 to about 16 and an average aliphatic amine hydrogen equivalent weight of from about 15 to about 500; and wherein
(i) components (A), (B) and (C) are present in quantities such that the weight percent of the theoretical reaction product of the amine hydrogen atoms of component (B-2) with a stoichiometric quantity of component (C) based upon the total weight of Components (A), (B) and (C) is from about 5 to about 25 and
(ii) the NCX index is from about 0.6:1 to about 1.50:1 with the proviso that when an NCX trimerization catalyst is also present the index is up to about 5:1.

4,269,946

LOW DENSITY HIGH RESILIENCY FOAMS

Carl M. Sullivan, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 31, 1980, Ser. No. 117,406
Int. Cl.[3] C08G *18/14*
U.S. Cl. 521—163 **5 Claims**

1. A process for producing a flexible polyurethane foam having improved load bearing characteristics for its density by effecting reaction between (a) a polyisocyanate and (b) a polymeric polyol which is a polyalkylene ether having a number average molecular weight in the range of 1000 to 7000 in the presence of (c) a catalyst and (d) a blowing agent, and 1,2-diaminocyclohexane.

4,269,947

CURED OR UNCURED AROMATIC POLYESTER COMPOSITION AND PROCESS FOR ITS PRODUCTION

Hiroo Inata; Makoto Ogasawara; Tsuto Morinaga, and Akihiro Norike, all of Hino, Japan, assignors to Teijin Limited, Osaka, Japan

Division of Ser. No. 920,834, Jun. 30, 1978, Pat. No. 4,196,066. This application Sep. 25, 1979, Ser. No. 78,680
Claims priority, application Japan, Jul. 5, 1977, 52/79445; Apr. 10, 1978, 53/41326; Apr. 12, 1978, 53/420262
Int. Cl.[3] C08J *3/28*
U.S. Cl. 525—10 **10 Claims**

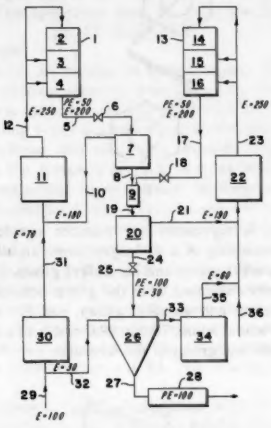
1. A cured or uncured linear aromatic polyester composition melt-blended and composed of
(A) 100 parts by weight of a saturated linear aromatic polyester in which at least 70 mole% of the acid component consists of an aromatic dicarboxylic acid, and
(B) 0.1 to 50 parts by weight of a reactive compound which is solid at room temperature or is a liquid having a boiling point of at least 200° C. under atmospheric pressure, and which contains in its molecule at least one aliphatic unsaturated group substantially non-reactive with the polyester (A) and the aliphatic unsaturated group of the reactive compound (B) under conditions of melt-blending with the polyester (A) and at least one epoxy group reactive with the polyester (A) under the melt-blending conditions.

4,269,948

PROCESS AND APPARATUS FOR WIDENING THE POLYETHYLENE MOLECULAR WEIGHT DISTRIBUTION BY USING TWO REACTORS AND TWO SEPARATORS

Adrien Nicco, Bethune, France, assignor to Societe Chimique des Charbonnages - CdF CHIMIE, Paris, France

Filed Dec. 28, 1979, Ser. No. 108,235
Claims priority, application France, Dec. 28, 1978, 78 36625
Int. Cl.[3] C08F *2/02, 10/02*
U.S. Cl. 525—53 **6 Claims**



1. A process for polymerizing ethylene at a pressure between 600 and 3,000 bars and at a temperature between 160° C. and 320° C. in two reactors operating in parallel, comprising reacting ethylene in a first reactor in the presence of less than 0.1% of hydrogen for the purpose of producing a polymer of high molecular weight, reacting ethylene in a second reactor in the presence of 0.2 to 5% of hydrogen for the purpose of producing a polymer of low molecular weight, expanding the effluents from these two reactors, and transferring said expanded effluents to a set of two separators so interconnected as to efficiently mix the polymers produced in the two reactors by recycling the least amount of hydrogen possible in the supply circuit of the first reactor in such a manner that the proportion of hydrogen in said first reactor remains less than 0.1% in moles.

4,269,949

PHENOL FORMALDEHYDE RESIN FOR HARDBOARD APPLICATIONS

Charles H. Hickson, New Albany Floyd, Ind., and Pitchaiya Chandramouli, Louisville, Ky., assignors to Borden, Inc., Columbus, Ohio

Filed Jun. 27, 1979, Ser. No. 52,452
Int. Cl.[3] C08G *8/10*
U.S. Cl. 525—58 **13 Claims**

1. Composition of matter comprising:
A. A homogeneous phenol formaldehyde resole resin having a formaldehyde to phenol ratio of about 1.2 to 2.5 and a water tolerance in excess of 2000%;
B. An alkaline catalyst;
C. An effective amount of weak acid to give a resin reactively value of about a quarter of an hour; and;
D. An effective amount of a non-cellulosic protective colloid to give a resin of improved flow properties including at least a good amount of stringiness; wherein the resin is prepared in a two stage process insitu by first reacting at least 80% of the total phenol and formaldehyde in the presence of the alkaline catalyst in a first stage to give a

high molecular weight condensation resin of about zero water tolerance and then treating the resulting resin with additional phenol and formaldehyde in an amount up to 20% of the total phenol and formaldehyde in a second stage until a resin having a desired water tolerance in excess of about 2000% is obtained.

4,269,950

THERMOPLASTIC MOLDING COMPOSITIONS OF VINYL AROMATIC COMPOUND α,β UNSATURATED CYCLIC ANHYDRIDE COPOLYMERS

Visvaldis Abolins, Delmar, and Gim F. Lee, Jr., Albany, both of N.Y., assignors to General Electric Company, Selkirk, N.Y.

Division of Ser. No. 935,919, Aug. 23, 1978, which is a division of Ser. No. 477,435, Jun. 7, 1974, Pat. No. 4,124,654. This application Jun. 6, 1980, Ser. No. 157,068

Int. Cl.[3] C08L *51/04, 35/06*

U.S. Cl. 525—68 2 Claims

1. A thermoplastic molding composition which comprises:

(a) from 40–95 parts by weight of a copolymer of a vinyl aromatic compound and an α,β-unsaturated cyclic anhydride; and

(b) from 10–50 parts by weight of an emulsion graft copolymer comprising (1) from 20–80% by weight of a backbone polymer of the units of butadiene or butadiene and styrene, wherein the butadiene units are present in quantities of at least 40% by weight of the backbone polymer, (2) 80–20% by weight of an acrylic monomer chosen from the group consisting of lower alkyl methacrylates, alicyclic methacrylates and alkyl acrylates, graft polymerized to (1) and (3) 0 to 60% by weight of a styrene monomer graft polymerized to (1) sequentially before the polymerization of (2).

4,269,951

PURIFICATION OF WET STRENGTH RESINS

Donald N. Van Eenam, Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed May 19, 1980, Ser. No. 150,790

Int. Cl.[3] C08F *8/08, 8/24, 8/32*

U.S. Cl. 525—359 8 Claims

1. A process for the removal of epihalohydrin and dihalopropanol impurities from an aqueous solution of a perepiquat resin which process comprises adjusting the pH of the solution to a value in the range 8 to 13 and volatilizing from the solution, at a temperature below 40° C., an azeotrope of epihalohydrin and water.

4,269,952

PREPARATION OF GLYCIDYL POLYARYLETHERS

Jean-Louis Locatelli, Vienne, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Jan. 4, 1980, Ser. No. 109,566

Claims priority, application France, Jan. 5, 1979, 79 00682

Int. Cl.[3] C08G *59/06*

U.S. Cl. 525—507 23 Claims

1. In a process for the preparation of a glycidyl polyarylether comprising reacting at least one alkali metal salt of a polyhydric phenol with at least one 1-halo-2,3-epoxyalkane, in an anhydrous and aprotic reaction medium, the improvement which comprises said reaction medium being heterogeneous and including an organic compound selected from the group comprising acetonitrile, propionitrile, benzonitrile and ethylene sulfide.

4,269,953

METHOD OF CROSSLINKING AROMATIC THERMOPLASTIC POLYMERS USING A BIPHENYLENE TERMINATED COMPOUND

Richard A. Brand, Poway, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Filed Apr. 2, 1979, Ser. No. 26,616

Int. Cl.[3] C08F *283/00;* C08G *75/20, 75/23*

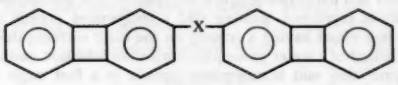
U.S. Cl. 525—534 13 Claims

1. The method of crosslinking aromatic thermoplastic polymers which comprises the steps of:

providing an aromatic thermoplastic polymer which is substantially resistant to degradation at temperatures below about 350° C.;

dissolving said polymer in a solvent;

mixing therewith from about 2 to 30 wt% (based on the polymer weight) of a biphenylene terminated compound having the general formula:



wherein X is selected from the group consisting of: isophthaloyl, carbonyl, sulfonyl, ethylene, ethylenedioxy, ethylidene, glyceryl, hydrazo, imido, malonyl, methylene, methylendioxy, oxy, phthaloyl, propylene, succinyl, sulfinyl, terephthaloyl, tetramethylene, thio, thiocarbonyl, trimethylene, ureylene, vinylene; vinylidene, xylylene and mixtures thereof;

evaporating the solvent, and

heating the mixture to a temperature of from about 300° to 350° C.

4,269,954

PROCESS FOR PRODUCING HOMO- OR COPOLYMERS OF VINYL OR VINYLIDENE HALIDES HAVING REDUCED POLYMER BUILDUP IN THE REACTOR

Marion G. Morningstar, and William D. Postel, Jr., both of Avon Lake, Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Continuation of Ser. No. 947,670, Oct. 2, 1978, abandoned. This application Nov. 13, 1979, Ser. No. 93,320

Int. Cl.[3] C08F *2/00, 14/06, 14/08*

U.S. Cl. 526—62 22 Claims

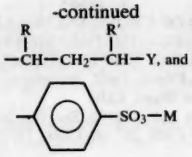
1. A process for producing homopolymers of vinyl and vinylidene halides and copolymers thereof either with each other or with up to 80% by weight of one or more vinylidene monomers having at least one terminal $CH_2{=}C<$ grouping comprising, forming a monomer premix containing the monomer or monomers to be polymerized, the aqueous reaction medium, from about 0.02% to about 0.20% by weight of a free-radical yielding catalyst based on the weight of 100 parts of monomer or monomers being polymerized, from about 0.0005% to about 0.02% by weight, based on the weight of the monomer(s), of an activator for said catalyst, from about 0.5% to about 4.0% by weight, based on the weight of the monomer(s) of at least one emulsifier selected from the group consisting of ammonium salts of a saturated fatty acid, alkali metal salts of a saturated fatty acid, said fatty acid containing from 8 to 20 carbon atoms, and a sulfate or sulfonate type soap having the general formula

$$CH^3(C_nH_{2n})—X$$

wherein n is an integer from 7 to 18, X is selected from the group consisting of

$$—CH{=}CH—CH_2—Y,$$

-continued



and wherein R is selected from the group consisting of —H, —OH, and an alkyl group having from 1 to 4 carbon atoms, R′ is selected from the group consisting of —H, and an alkyl group having from 1 to 4 carbon atoms, and Y is selected from the group consisting of $-SO_3-M$, $-O-SO_3-M$, and $-O-CH_2CH_2-O)_mSO_3-M$, wherein M is selected from the group consisting of NH_3, Na and K, and m is an integer from 7 to 17, at least one long straight chain saturated alcohol containing from 12 to 24 carbon atoms, wherein the ratio of alcohol to emulsifier is 1.0 or greater than 1.0, homogenizing said premix at a temperature below the reactivity of the catalyst or catalysts employed, passing said homogenized premix to a reaction vessel having a coating on the inner surfaces thereof comprised of a water phase polymerization inhibitor, emulsion polymerizing said homogenized premix in a first stage at a temperature in the range of about 30° C. to about 50° C. to a conversion in the range of about 25% to about 30%, thereafter polymerizing said premix in a second stage at a temperature in the range of about 35° C. to about 60° C., then polymerizing said premix in a third stage at a temperature in the range of about 40° C. to about 70° C., wherein the temperature in each of said stages is different and chosen so as to maintain a substantially constant reaction rate, maintaining the pH of the reaction mixture in said stages in the range of about 9.0 to about 11.0 until the reaction is complete, the total time to complete reaction in said first stage through said third stage being in the range of about 6 hours to about 14 hours, and thereafter recovering the homopolymer or copolymer, whereby polymer buildup in said reaction vessel is substantially reduced.

4,269,955

CATALYST COMPOSITION POLYMERIZATION OF ISOOLEFINS AND MULTIOLEFINS

Joseph Wagensommer, Westfield, and Pacifico V. Manalastas, Jersey City, both of N.J., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 827,700, Aug. 25, 1977, abandoned. This application Feb. 1, 1979, Ser. No. 8,789

Int. Cl.³ C08F *4/52*

U.S. Cl. 526—185 **3 Claims**

1. A catalyst composition used for preparing polymers at polymerization conditions of about −50° C. to about −100° C. at a pressure of about 0 to about 1000 psig for about 1 to about 60 minutes from a mixture of monomers dissolved in a cosolvent, said cosolvent selected from the group consisting of cyclic, branched and normal paraffinic hydrocarbons, said mixture of monomers consisting essentially of an isoolefin and one or more multiolefins, said isoolefin being selected from the group consisting of isobutylene, 2-methyl-butene, 3-methyl-butene, 4-methyl-pentene-1 and β-pinene, said multiolefin being selected from the group consisting of isoprene, piperylene, cyclopentadiene, and methylcyclopentadiene and mixtures thereof, a weight ratio of said isoolefin to said cosolvent being about 1 to about 10, said catalyst composition comprising a soluble reaction product formed in a paraffinic hydrocarbon solvent from the reaction of a material of the formula $RAlX_2$ and a halogen containing material, wherein X is the same or different halogen selected from the group consisting of Cl and Br, wherein said halogen containing material is selected from the group consisting of Cl_2, Br_2, and BrCl, wherein R is an alkyl of straight or branched chain structure of from 1 to 7 carbon atoms, wherein the molar ratio of the halogen containing material to said $RAlX_2$ is about 0.014 to about 0.065, said catalyst composition being soluble in said mixture of monomers and said cosolvent, and a molar ratio of said catalyst composition to said mixture of said monomers being about 0.0002 to about 0.0008.

4,269,956

PEROXYGEN COMPOUND-METAL CARBOXYLATE REDOX CATALYST SYSTEM FOR VINYL CHLORIDE POLYMERIZATION

Norman G. Gaylord, New Providence, and Meshulam Nagler, Irvington, both of N.J., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed Dec. 21, 1979, Ser. No. 106,325

Int. Cl.³ C08F *14/06*

U.S. Cl. 526—192 **12 Claims**

1. A process for the preparation of polymers and copolymers of vinyl chloride, which consists in polymerization in bulk or suspension, at a temperature of 70° C. or below in the presence of a redox catalyst system consisting essentially of a peroxygen compound selected from the class consisting of peroxyesters and diacyl peroxides, a reduced agent selected from the class consisting of stannous carboxylates and antimony (III) carboxylates, and a complexing agent and where the peroxygen compound/reducing agent mole ratio is 1/0.01–2 and wherein the polymerization is carried out at a temperature wherein the peroxygen compound has a half-life of more than 50 hours in the absence of the reducing agent.

4,269,957

PEROXYGEN COMPOUND-METAL CARBOXYLATE REDOX CATALYST SYSTEM FOR VINYL MONOMER POLYMERIZATION

Norman G. Gaylord, New Providence; Meshulam Nagler, Irvington, and Marvin M. Fein, Westfield, all of N.J., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed Dec. 21, 1979, Ser. No. 106,332

Int. Cl.³ C08F *14/06*

U.S. Cl. 526—192 **12 Claims**

1. A process for the preparation of polymers and copolymers of ethylenically unsaturated monomers subject to free radical polymerization, which consists in polymerization in bulk or suspension, at a temperature of 70° C. or below in the presence of a redox catalyst system consisting of a peroxygen compound selected from the class consisting essentially of peroxyesters and diacyl peroxides, and a reducing agent selected from the class consisting of stannous carboxylates and antimony (III) carboxylates, and where the peroxygen compound/reducing agent mole ratio is 1/0.01–2 and wherein the polymerization is carried out at a temperature where the peroxygen compound has a half-life of more than 50 hours in the absence of the reducing agent.

4,269,958

PEROXYGEN COMPOUND-STANNOUS CHLORIDE REDOX CATALYST SYSTEM FOR SUSPENSION POLYMERIZATION OF VINYL CHLORIDE

N. Grant Gaylord, New Providence, N.J., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Dec. 21, 1979, Ser. No. 106,333

Int. Cl.³ C08F *14/06*

U.S. Cl. 526—192 **6 Claims**

1. A process for the preparation of polymers and copolymers of vinyl chloride, which consists in suspension polymerization at a temperature of 70° C. or below, in the presence of a redox catalyst system consisting essentially of a peroxygen compound selected from the class consisting of peroxyesters and diacyl peroxides, and stannous chloride wherein the polymerization is carried out at a temperature wherein the peroxygen compound has a half-life of more than 50 hours in the absence of stannous chloride.

4,269,959
METHOD OF PREPARING IMPROVED IMBIBITIVE POLYMER

Emil A. Lawton, Sherman Oaks, Calif., assignor to Whittaker Corporation, Los Angeles, Calif.

Filed Oct. 22, 1979, Ser. No. 86,928
Int. Cl.³ C08F *20/14*
U.S. Cl. 526—194 **5 Claims**

1. A method of preparing an improved imbibitive polymer, said method comprising:

a. linearly polymerizing with a free radical-yielding catalyst selected from the group consisting of benzoyl peroxide, azo-bis-isobutyro-nitrile and mixtures thereof, a suspension of methyl acrylate in an aqueous medium, the concentration of said catalyst being about 1% by weight of the methyl acrylate, said medium containing a selected suspending agent comprising liquid suspending agent selected from the group consisting of sodium polyacrylate, polyacrylamide and mixtures thereof in a concentration of about 1–15% by weight of the methyl acrylate and a solid suspending agent selected from the group consisting of talc, bentonite, calcium carbonate, kaolin and mixtures thereof, said solid suspending agent being in a concentration of about 1–5% by weight of the methyl acrylate, said linear polymerizing being carried out while cross-linking the partially polymerized methyl acrylate with cross-linking agent selected from the group consisting of divinyl benzene, 1,6-hexane-diol acrylate, ethylene glycol dimethacrylate and mixtures thereof, said cross-linking agent being present in a concentration of about 0.02–0.4%, by weight of said methyl acrylate; and,

b. recovering the resulting lightly cross-linked polymethyl acrylate beads having an average diameter of about 150–1000 μm, said beads being capable of imbibing liquids with solubility parameters of about 8,5–11.5 Hildebrands.

4,269,960
PEROXYGEN COMPOUND-6-O-ALKANOYL-L-ASCORBIC ACID REDOX CATALYST SYSTEM FOR VINYL MONOMER POLYMERIZATION

Norman G. Gaylord, New Providence, N.J., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Dec. 21, 1979, Ser. No. 106,330
Int. Cl.³ C08F *14/06*
U.S. Cl. 526—213 **11 Claims**

1. A process for the preparation of polymers and copolymers of ethylenically unsaturated monomers subject to free radical polymerization, which consists in polymerization in bulk or suspension, at a temperature of 70° C. or below in the presence of a redox catalyst system consisting essentially of a peroxygen compound selected from the class consisting of peroxyesters and diacyl peroxides, and a 6-O-alkanoyl-L-ascorbic acid as a reducing agent and wherein the polymerization is carried out at a temperature where the peroxygen compound has a half-life of more than 50 hours in the absence of the reducing agent.

4,269,961
LOW TEMPERATURE CURABLE COMPLIANT BISMALEIMIDE COMPOSITIONS

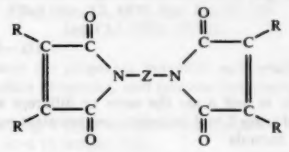
Robert J. Jones, Hermosa Beach; Howard E. Green, Seal Beach, and Sandra C. Quinlivan, Torrance, all of Calif., assignors to TRW, Inc, Redondo Beach, Calif.

Division of Ser. No. 845,058, Oct. 25, 1977, Pat. No. 4,179,551. This application Oct. 15, 1979, Ser. No. 84,651
Int. Cl.³ C08F *226/06*
U.S. Cl. 526—262 **37 Claims**

1. A low temperature curable composition which is curable upon additon of an acid catalyst and/or heating to about 65° C. and which comprises:

(a) a curable prepolymer which is a polyimide formed at an elevated temperature sufficient to cause thermal reaction between heated components of:

(i) at least one aliphatic bismaleimide of the formula:



wherein Z is a polyaliphatic ether in which each aliphatic ether group individually contains from 1 to about 6 carbon atoms, and in which each R is independently selected from the group consisting of hydrogen, an aliphatic group containgin 1 or 2 carbon atoms, a benzenoid radical and a halogen; and

(ii) at least one aromatic polyamine ; and

(b) at least one trismaleimide.

4,269,962
ELECTRON RESIST

Jaroslav Kalal; Bohumil Bednar; Jaromir Zachoval; Jiri Petr; Zdenek Pelcbauer, all of Prague, and Frantisek Svec, Kladno, all of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed Oct. 27, 1978, Ser. No. 955,457
Claims priority, application Czechoslovakia, Nov. 7, 1977, 7258/77
Int. Cl.³ B41N *1/08*; G03F *7/10*; C08F *220/20, 236/14*
U.S. Cl. 526—273 **1 Claim**

1. An electron resist for electron lithography formed by copolymers of glycidyl methacrylate or glycidyl acrylate with monomers, selected from the group consisting of butadiene-1,3 or isoprene, wherein said copolymers contain 20 to 65 mol. % of glycidyl methacrylate or glycidyl acrylate and have the number average molecular weight in the region of 4,000 to 90,000.

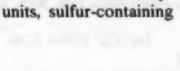
4,269,963
MERCAPTOORGANOPOLYSILOXANES AND CURABLE COMPOSITIONS INCLUDING SAME

Gary R. Homan, and Chi-Long Lee, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

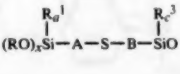
Filed Dec. 3, 1979, Ser. No. 99,300
Int. Cl.³ C08G *77/06*
U.S. Cl. 528—17 **11 Claims**

6. A composition of matter comprising a material prepared by mixing

(A) an organopolysiloxane consisting essentially of a combination of units selected from dimethylsiloxane units, trimethylsiloxane units, sulfur-containing siloxane units of the formula



and pendent sulfur-containing siloxane units of the formula



wherein:

R and R^1 are the same or different and selected from the group consisting of methyl and ethyl;

x has a value of 2 or 3;

a has a value of 0 or 1;

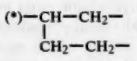
A and B are the same or different and selected from among the group consisting of divalent radicals of the formulas

$$-C_mH_{2m}-$$

and

$$-C_nH_{2n}-$$

wherein: m and n are the same or different and have a value of from 2 to 4 inclusive, and trivalent radicals having the formula



forming a silacyclopentamer by attachment of the (+) bond to a sulfur atom and the other two bonds to one silicon atom;

R^2 is a monovalent radical selected from the group consisting of alkyl and alkoxy radicals having from 1 to 3 carbon atoms inclusive and phenyl radical;

b has a value of 1 or 2;

R^3 is methyl or ethyl;

c has a value of 0 or 1;

provided that (1) in the divalent radical, no carbon atom is attached to both a silicon atom and a sulfur atom; (2) when A is a trivalent radical, x is 2 and a is 0; (3) when B is a trivalent radical, b is 1 and c is 0; and (4) when B is a divalent radical, b is 2 and c is 1; said organopolysiloxane containing an average of at least two sulfur-containing siloxane units per molecule and no more than 10 mole percent pendent sulfur-containing siloxane units based on the total number of siloxane units present in the organopolysiloxane;

(B) a curing catalyst in an amount equal to from about 1 to about 10 parts by weight per 100 parts by weight of (A);

(C) a filler in an amount of from about 0 to about 200 parts by weight per 100 parts by weight of (A); and

(D) a cross-linking agent in an amount of from 0 to 10 parts by weight per 100 parts by weight of (A).

11. The composition of matter in accordance with claim **6** in which the curing catalyst of (B) is a titanium ester and the composition is stable when packaged to exclude moisture but will cure spontaneously upon exposure to moisture.

4,269,964

POLYCARBONATES WITH ALKYLPHENYL END GROUPS, THEIR PREPARATION AND THEIR USE

Dieter Freitag; Werner Nouvertne; Claus Burkhardt, all of Krefeld, and Frank Kleiner, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

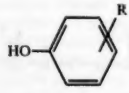
Filed Sep. 14, 1979, Ser. No. 75,439

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1978, 2842005

Int. Cl.[3] **C08G** *8/28*

U.S. Cl. 528—126 **14 Claims**

1. A thermoplastic aromatic polycarbonate with a molecular weight Mw (weight average) of about 10,000 to 200,000, which is based on at least one diphenol and, if appropriate, a branching agent, characterized in that it is also based on at least one phenolic chain stopper of the general formula



(I)

in which

R represents a branched alkyl radical consisting of 8 or 9 C atoms, and, in the alkyl radical, the proportion of CH_3 protons is between about 47% and 89% and the proportion of the sum of the CH and CH_2 protons is between about 53% and 11%, and wherein R can be in the o-position or p-position relative to the OH group, the upper limit of the ortho proportion being about 20%.

4,269,965

AROMATIC POLYESTER WHICH FORMS OPTICALLY ANISOTROPIC MELTS AND FILAMENTS THEREOF

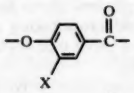
Robert S. Irwin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 17, 1979, Ser. No. 76,799

Int. Cl.[3] **C08G** *63/60*

U.S. Cl. 528—128 **16 Claims**

1. Fiber-forming copolyesters consisting essentially of units I, II and III having the structural formulas:



I

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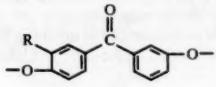
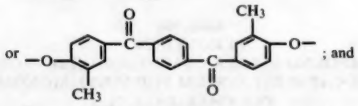
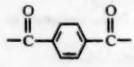


II

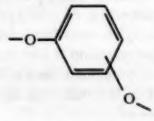


; and

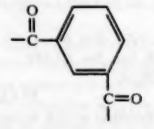


III

where X and R are independently hydrogen, methyl- or chloro-, in the proportions of about 50–75 mol % of Unit I, about 10–25 mol % of Unit II, and about 10–25 mole % of Unit III with from 0–10 mol % of



units selected from 1,3- or 1,4-dioxybenzene or from 0 to 5 mole % of



units.

4,269,966

POLY'MIDE PREPOLYMER, POLYIMIDE RESIN FROM IMIDE ACID CHLORIDE AND DIAMINE

Horst Stenzenberger, Dossenheim, Fed. Rep. of Germany, assignor to Technochemie GmbH Verfahrenstechnik, Heidelberg, Fed. Rep. of Germany

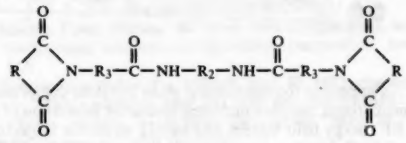
Division of Ser. No. 703,548, Jul. 8, 1976, abandoned. This application Dec. 4, 1978, Ser. No. 966,168

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1975, 2530571

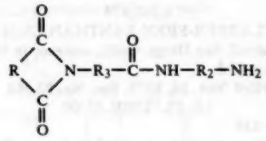
Int. Cl.[3] C08G *69/26, 73/10*

U.S. Cl. 528—322 10 Claims

1. A polyimide prepolymer mixture consisting of a compound of the formula

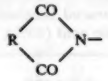


and a compound of the formula



in which

the group of the formula



is an unsaturated dicarboxylic acid imido group,

the group of the formula —R_3—CO— is an acyl group attached to the imido nitrogen atom, and

R_2 is a group forming with the two nitrogen atoms attached thereto a diamino member,

said polyimide prepolymer mixture being convertible by heating between about 80° C. and about 400° C. into a substantially infusible and insoluble, cross-linked polyimide resin.

4,269,967

SEMIPERMEABLE MEMBRANES OF AROMATIC DISULFIMIDE CONTAINING POLYAMIDES

Klaus Elfert; Gerhard D. Wolf, and Hans J. Rosenkranz, all of Dormagen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 835,313, Sep. 21, 1977, abandoned. This application May 30, 1979, Ser. No. 43,623

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1976, 2642979

Int. Cl.[3] C08G *69/32*

U.S. Cl. 528—337 7 Claims

1. A water-insoluble semipermeable membrane consisting of an aromatic polyamide containing at least 20 mol % of structural segments containing disulphimide groups and having a relative viscosity η_{rel} of ≧1.4, as measured on a 0.5% N-methyl pyrrolidone solution at 20° C.

4,269,968

SYNTHESIS OF POLYAMIC ACID

John Duran; Leo Missel, both of San Jose, and Thomas O. Montelbano, Palo Alto, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 13, 1979, Ser. No. 93,779

Int. Cl.[3] C08G *73/10*

U.S. Cl. 528—351 5 Claims

1. A process for preparing polyamic acid which has improved adhesion properties, said process comprising the steps of:

(1) compacting a solid aromatic dianhydride to reduce its surface area to weight ratio,

(2) forming a solution by dissolving an aromatic diamine in an inert non-aqueous solvent, and

(3) reacting the aromatic dianhydride in solid compacted form with the solution of the organic diamine.

4,269,969

POLYBUTADIENEDIOL PURIFICATION

James T. O'Toole, Philadelphia, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 13, 1979, Ser. No. 93,467

Int. Cl.[3] C08F *6/10;* C08C *2/02*

U.S. Cl. 528—498 7 Claims

1. In the method of deodorizing in which a polybutadiene suitable for preparing polyurethanes by reaction with polyisocyanates is prepared by polymerization of butadiene in a system containing hydrogen peroxide as the catalyst, the improvement which consist of:

modifying a composition containing said polybutadiene by blending therewith sufficient kerosene consisting predominantly of saturated hydrocarbons having at least 9 but not more than 13 carbons, as a hydrocarbon entraining agent, to constitute from about 0.4 to about 6% of said polybutadiene to prepare a blended composition;

subjecting said blended composition to a hot vacuum zone at about 93° C. about 121° C. at 2 to 300 mm pressure to volatilize substantial portions of any vinyl cyclohexene, any related odiferous materials, hydrocarbon entraining agent, and any other components covolatilizable therewith, thereby providing a deodorized polybutadiene composition containing less than 20 ppm of vinyl cyclohexene and recovering said deodorized composition as the product of the method.

4,269,970

1,2-CARBAMATES OF FORTIMICIN B AND DERIVATIVES

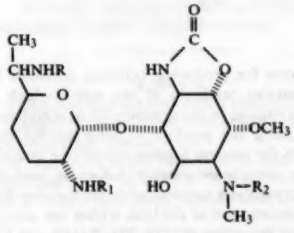
John S. Tadanier, and Jerry R. Martin, both of Waukegan, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Sep. 26, 1979, Ser. No. 79,138

Int. Cl.[3] C07H *15/22;* C07D *413/02*

U.S. Cl. 536—17 R 13 Claims

1. A 1,2-carbamate of fortimicin B and derivatives represented by the formula



wherein: R is hydrogen or a monocyclicaryloxycarbonyl amine-protecting group; R_1 is hydrogen or a monocy-

clicaryloxycarbonyl amine-protecting group; and R_2 is selected from the group consisting of loweralkyl, loweralkoxycarbonyl, aminoloweralkyl, hydroxyloweralkyl, hydroxy-substituted aminoloweralkyl, an amino acid residue, an N-protected amino acid residue, and when R or R_1 are hydrogen, R_2 can also be hydrogen, and when any of R, R_1 or R_2 are hydrogen, the acid addition salts thereof.

4,269,971

ANTIBIOTIC TM-531

Michio Yamagishi, Tokorozawa; Akira Kawashima, Tokyo; Taku Mizutani, Ageo; Hiroshi Hara, Kitamoto; Kazutoshi Mizoue, Urawa; Sadafumi Omura, Ageo; Haruo Seto, Uenomachi, and Noboru Otake, Yokohama, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd., Tokyo, Japan

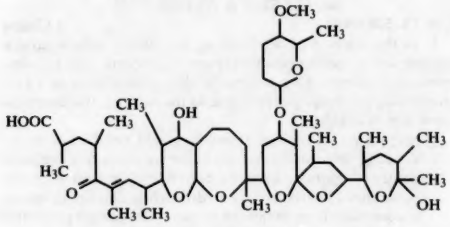
Filed Dec. 31, 1979, Ser. No. 108,625

Claims priority, application Japan, Dec. 29, 1978, 53-14118

Int. Cl.³ A61K *31/71;* **C07H** *7/06*

U.S. Cl. 536—17 R **1 Claim**

1. Antibiotic TM-531 having the formula:



4,269,972

PROCESS FOR PRODUCING CELLULOSE DIACETATE HAVING IMPROVED RESISTANCE TO DELUSTERING PHENOMENON IN HOT WATER

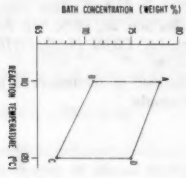
Hideo Yabune, and Yoshiyuki Ikemoto, both of Himeji, Japan, assignors to Daicel Ltd., Sakai, Japan

Filed Jun. 11, 1979, Ser. No. 47,469

Claims priority, application Japan, Jun. 9, 1978, 53-70278

Int. Cl.³ C08B *3/06*

U.S. Cl. 536—71 **6 Claims**



1. A process for producing cellulose diacetate having reduced delustering tendency in hot water which comprises acetylating cellulose in the presence of an acetylation catalyst and hydrolyzing the product to form secondary cellulose acetate, with the process further comprising completely neutralizing the acetylation catalyst before at least the middle stage of the hydrolysis reaction while maintaining the temperature and concentration of the bath within the area defined by and including the points A (110, 78), B (110, 71), C (120, 67), and D (120, 75), in rectangular coordinates (degree C., % by weight) shown in FIG. 2 in the accompanying drawings.

4,269,973

PROCESS AND APPARATUS FOR MAKING ALKALI CELLULOSE IN SHEET FORM

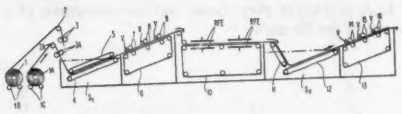
Charles J. Geyer, Jr., Berwyn, and Ben E. White, Wayne, both of Pa., assignors to Fiber Associates, Inc., Berwyn, Pa.

Continuation of Ser. No. 576,200, May 9, 1975, Pat. No. 4,163,840. This application Jan. 18, 1979, Ser. No. 4,302

The portion of the term of this patent subsequent to Aug. 7, 1996, has been disclaimed.

Int. Cl.³ C08B *1/08, 1/10*

U.S. Cl. 536—101 **6 Claims**



1. An apparatus for mercerizing alkali cellulose comprising:
a mercerizing chamber including means for generation of an RF energy field therein, and having means for subjecting said cellulose to mercerizing conditions including said RF energy field.

4,269,974

CLABBER-FREE XANTHAN GUM

Peter Wintersdorff, San Diego, Calif., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 14, 1979, Ser. No. 93,961

Int. Cl.³ C08B *37/00*

U.S. Cl. 536—114 **5 Claims**

1. Clabber-free xanthan gum, wherein a milled emulsion consisting essentially of 1.0% said gum, 6.0% vegetable oil, 80% H_2O, 12% acetic acid (10%), and 1% KCl exhibits at room temperature a working yield value at a shear stress of 0.01 sec^{-1} at least 50% less than a control emulsion consisting essentially of 1.0% unsheared xanthan gum, 6.0% vegetable oil, 80% H_2O, 12% acetic acid (10%), and 1% KCl.

4,269,975

PREPARATION OF GUAR GUM

Morton W. Rutenberg, North Plainfield, and Thomas R. Molnar, Edison, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Mar. 10, 1980, Ser. No. 129,141

Int. Cl.³ C08B *37/00;* **C07G** *17/00*

U.S. Cl. 536—114 **10 Claims**

1. A process for preparing a guar gum from guar splits, which comprises the steps of:
a. hydrating guar splits with water at about 5° to 95° C. for at least 0.25 hour whereby the total moisture content of said guar splits is increased to about 25 to 80% by weight;
b. extruding said hydrated guar splits by passage through an extruder having an elongated cylindrical barrel provided with an inlet opening, a die opening at the outlet end of said barrel, and a screw rotatable within said barrel to transport and work said guar splits; and
c. grinding said hydrated and extruded guar splits.

4,269,976

PIGMENT OF SODIUM SALT OF BIS-METHINE-BARBITURIC ACID

Armand Roueche, Bottmingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

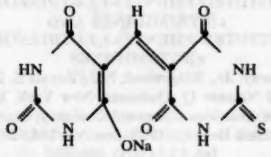
Filed Aug. 24, 1979, Ser. No. 69,411

Claims priority, application Switzerland, Sep. 5, 1978, 9335/78

Int. Cl.³ C09B *23/00, 55/00*

U.S. Cl. 542—445 **1 Claim**

1. The pigment of the formula



4,269,977

PROCESS FOR THE MANUFACTURE OF 8-OXO-5-THIA-1-AZABICYCLO [4,2,0]OCT-2-ENE OR 3-ENE COMPOUNDS

Heinrich Peter, Riehen, and Hans Bickel, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

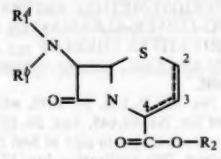
Continuation of Ser. No. 255,826, May 22, 1972, abandoned. This application Mar. 24, 1976, Ser. No. 670,035

Claims priority, application Switzerland, May 24, 1971, 7540/71; Apr. 13, 1972, 5425/72

Int. Cl.[2] C07D *501/04*

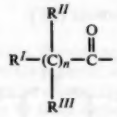
U.S. Cl. 544—16 7 Claims

1. A process for the manufacture of 7β-amino-cephem-4-carboxylic acid compounds of the formula



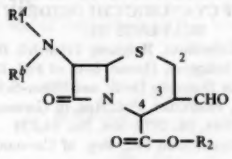
(I)

wherein R_1^A is an acyl group of the formula



(IA)

in which n represents O and R^I represents cycloalkyl with 5–7 ring carbon atoms substituted by a member selected from the group consisting of amino and sulphoamino, or represents a member selected from the group consisting of phenyl, naphthyl and tetrahydronaphthyl, and these groups substituted by a member selected from the group consisting of hydroxyl, lower alkoxy and halogen, or represents 4-isoxazolyl and 4-isoxazolyl substituted by a member selected from the group consisting of lower alkyl, phenyl and halogeno-phenyl, or represents amino N-substituted by a member selected from the group consisting of lower alkyl and halogen-lower alkyl, or n represents 1, R^I represents a member selected from the group consisting of lower alkyl and lower alkyl substituted by a member selected from the group consisting of halogeno, phenyloxy, hydroxy-phenyloxy, halogeno-phenyloxy, amino and carboxyl, or represents lower alkenyl or represents a member selected from the group consisting of phenyl, hydroxyl-phenyl, halogeno-phenyl and phenyloxy-phenyl, or represents a member selected from the group consisting of pyridyl, pyridinium, thienyl, 1-imidazolyl and 1-tetrazolyl or such heterocyclic radical substituted by a member selected from the group consisting of lower alkyl, amino and amino-methyl, or represents a member selected from the group consisting of lower alkoxy, phenyloxy, hydroxyl-phenyloxy and halogeno-phenyloxy, or represents a member selected from the group consisting of lower alkylthio and lower alkenylthio, or represents a member selected from the group consisting of phenylthio, 2-imidazolylthio, 1,2,4-triazol-3-ylthio, 1,3,4-triazol-2-ylthio, 1,2,4-thiadiazol-3-ylthio, 1,3,4-thiadiazol-2-ylthio and 5-tetrazolylthio, and such groups substituted by lower alkyl, or represents a member selected from the group consisting of halogeno, carboxyl, lower alkoxy-carbonyl, cyano, carbamoyl and carbamoyl N-substituted by a member selected from the group consisting of lower alkyl and phenyl, or represents a member selected from the group consisting of lower alkanoyl and azido, and R^{II} and R^{III} represent hydrogen, or n represents 1, R^I represents a member selected from the group consisting of phenyl and thienyl and these groups substituted by a member selected from the group consisting of hydroxyl and halogeno, or represents 1,4-cyclohexadienyl, R^{II} represents a member selected from the group consisting of amino, lower alkoxycarbonylamino, 2-halogeno-lower alkoxycarbonylamino, carbamoylamino, guanidinocarbonylamino, sulphoamino, azido, carboxyl, lower alkoxycarbonyl, cyano, sulpho, hydroxyl, lower alkoxycarbonyloxy, 2-halogeno-lower alkoxycarbonyloxy, lower alkoxy, phenyloxy and halogeno, and R^{III} represents hydrogen, or n represents 1, R^I and R^{II} each represent a member selected from the group consisting of halogeno and lower alkoxycarbonyl, and R^{III} represents hydrogen, or n represents 1 and each of the groups R^I, R^{II} and R^{III} represents lower alkyl, $R_1{}^b$ is hydrogen, and R_2 is a member selected from the group consisting of hydrogen, 2-halogeno-lower alkyl, phenacyl, nitrophenyl, polyhalogeno-phenyl, lower alkoxy-benzyl, nitrobenzyl, tert.-butyl, diphenylmethyl, 4,4'-dimethoxydiphenyl, bis-(4-methoxyphenyloxy)-methyl, trityl, lower alkanoylaminomethyl, carbamoylaminomethyl, ureidocarbonylaminomethyl quanidinocarbonylaminomethyl, or lower alkanoyloxymethyl, tri-lower alkyl-silyl and tri-lower alkyl-stannyl, and which cephem compounds contain a double bond in one of the positions 2,3 and 3,4, as well as 1-oxides of the formula I, in which the ring double bond is in the 3,4-position, or metal or ammonium salts of compounds of the formula I in which R_2 represents hydrogen, or acid addition salts of such compounds, wherein $R_1{}^a$ and $R_1{}^b$ represent hydrogen or which possess a basic group in the radical $R_1{}^a$ and $R_1{}^b$, or internal salts of such compounds which possess both types of salt-forming groups, characterized in that a 3-formylcephem-4-carboxylic acid compound of the formula



(II)

which contains a double bond in the 2,3-position, or a 1-oxide of a ceph-3-em compound of the formula II, is decarbonylated in the 3-position by treating in an inert solvent and at a temperature of between 10° C. to 150° C. with tris-triphenylphosphine-rodium-I-chloride, bis-triphenylphosphine-platinum-II-chloride, bis-triphenylphosphine-carbonyliridium-II-chloride or tris-triphenylphosphine-iridium-I-chloride.

4,269,978

THIAZOLYLPHTHALIDE COMPOUNDS

Jean C. Petitpierre, Kaiseraugst, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

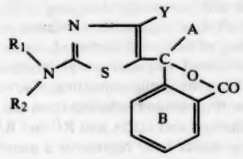
Division of Ser. No. 629,156, Nov. 5, 1975, Pat. No. 4,100,169. This application Mar. 27, 1978, Ser. No. 890,440

Claims priority, application Switzerland, Nov. 14, 1974, 15189/74

Int. Cl.[3] C07D *277/20*

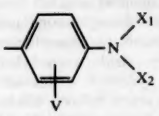
U.S. Cl. 544—133 5 Claims

1. A thiazolylphthalide compound of the formula



(I)

wherein A represents a p-aminophenyl radical of formula



(Ia)

each of R_1, R_2, X_1 and X_2, independently represents hydrogen, alkyl of 1 to 12 carbon atoms, alkoxyalkyl of 2 to 8 carbon atoms, benzyl or phenyl, or

each pair of substituents R_1 and R_2, X_1 and X_2, together with the nitrogen atom to which they are attached, independently represent a pyrrolidine, piperidine or morpholine,

Y represents hydrogen, alkyl of 1 to 12 carbon atoms, benzyl or phenyl or phenyl substituted by halogen, nitro, alkyl, alkoxy or dialkylamino, each containing 1 to 4 carbon atoms in the alkyl moiety,

V represents hydrogen, alkyl of 1 to 12 carbon atoms, alkoxy of 1 to 12 carbon atoms or alkanoyloxy of 2 to 4 carbon atoms, and

the benzene rings B is unsubstituted or substituted by halogen, nitro or by an amino group which is unsubstituted or substituted by alkyl of 1 to 6 carbon atoms, and

wherein at least one pair of substituents R_1 and R_2, X_1 and X_2, together with the nitrogen atom to which they are attached represent a pyrrolidine, piperidine or morpholine.

4,269,979

PROCESS FOR THE PRODUCTION OF SUSPENSION OR SOLUTION OF CYANURIC CHLORIDE IN ORGANIC SOLVENTS (II)

Klaus Hentschel, Kalmthout, Belgium; Friedrich Bittner, Bad Soden, and Gerd Schreyer, Hanau, both of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Nov. 16, 1979, Ser. No. 94,874

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1978, 2850243

Int. Cl.³ C07D *251/28*

U.S. Cl. 544—190 **7 Claims**

1. A process for the production of a suspension or solution of cyanuric chloride in a pure organic solvent containing less than 0.1 weight % of water, comprising spraying cyanuric chloride downwardly and outwardly at a temperature in its molten range from the upper portion of a vertical tubular zone closed at the top thereof to contact and mix with said organic solvent which forms a liquid layer defining said tubular zone, constricting said layer in breast -shaped manner downwardly below the place of entry of the cyanuric chloride into the tubular zone to form a narrower discharge opening; discharging said organic solvent as a spray tangentially to said layer and directed slightly upwardly in the direction of the closed top above said constriction and below the point of introduction of the cyanuric chloride and thereby forming said liquid layer along the entire tubular zone to the point of introduction of the cyanuric chloride, whereby the thickness of said layer where it is formed in breast-shaped constriction is greater than it is in the remainder of the tubular zone.

4,269,980

(SUBSTITUTED-PHENYL)-1,2,4-TRIAZOLO[4,3-c]PYRIMIDINES AND (SUBSTITUTED-PHENYL)-1,2,4-TRIAZOLO[1,5-c]PYRIMIDINES

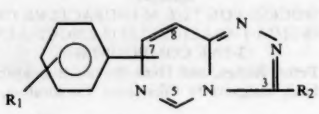
Robert A. Hardy, Jr., Ridgewood, N.J.; Jannie S. Baker, White Plains, and Nicanor Q. Quinones, New York, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 17, 1979, Ser. No. 104,526

Int. Cl.³ C07D *239/70*

U.S. Cl. 544—256 **19 Claims**

1. A compound of the formula:



wherein R_1 is selected from the group consisting of hydrogen, fluoro, chloro, trifluoromethoxy and alkoxy having up to 3 carbon atoms and R_2 is selected from the group consisting of hydrogen and alkyl having up to 3 carbon atoms.

4,269,981

CERTAIN PYRIDYLMETHYL ESTERS OF FORMAMIDO-LOWER-ALKANOATES AND DERIVATIVES THEREOF

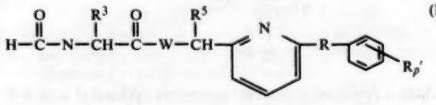
Clive A. Henrick, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Division of Ser. No. 78,525, Sep. 24, 1979, which is a continuation-in-part of Ser. No. 69,445, Aug. 24, 1979, Pat. No. 4,226,872, which is a continuation-in-part of Ser. No. 16,775, Mar. 2, 1979, abandoned. This application Jun. 12, 1980, Ser. No. 158,834

Int. Cl.³ C07D *213/55, 213/56, 213/57*

U.S. Cl. 546—291 **5 Claims**

1. A compound of the formula (III'):



(III')

wherein,

W is oxygen or sulfur;

p is zero, one or two;

R is oxygen, sulfur, methylene or carbonyl;

R^3 is lower alkyl of 2 to 5 carbon atoms, lower alkenyl of 2 to 5 carbon atoms or lower cycloalkyl of 3 to 4 carbon atoms;

R^5 is hydrogen, cyano, methyl, ethyl, ethynyl or Trifluoromethyl; and

R' is fluoro, bromo, chloro, trifluoromethyl, methyl, methoxy or methylthio.

4,269,982

PROCESS FOR PREPARING 5-AMINO-1,2,3-THIADIAZOLES

Mamoru Nakai; Katsumasa Harada, and Yoshikatsu Mori, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube, Japan

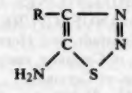
Filed Apr. 22, 1980, Ser. No. 142,718

Int. Cl.³ C07D *285/06*

Claims priority, application Japan, Dec. 27, 1979, 54-169292

U.S. Cl. 548—127 **6 Claims**

1. A process for preparing a 5-amino-1,2,3-thiadiazole represented by the formula



wherein R represents a hydrogen atom, a lower alkyl group or an aryl group, which comprises bringing a diazoacetonitrile represented by the formula

wherein R has the same meaning as defined above, into contact with hydrogen sulfide in the presence of a base or with a salt of hydrogen sulfide, in a solvent.

4,269,983
3-[5-[1-(2 OR 3-HALOPHENOXY)ALKYL, ALKYNYL, ALKENYL, OR HALOALKYL]-1,3,4-THIADIAZOL-2-YL]-4-HYDROXY-1-METHYL-2-IMIDAZOLIDINONES

Jerome M. Lavanish, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

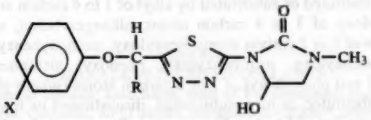
Filed Jun. 18, 1979, Ser. No. 49,017

The portion of the term of this patent subsequent to Aug. 19, 1997, has been disclaimed.

Int. Cl.[3] **A01N** *43/82;* **C07D** *285/12, 417/02, 417/04*

U.S. Cl. 548—137 **11 Claims**

1. a compound graphically represented by Formula I:



wherein:

X is chlorine, bromine, fluorine or iodine, positioned at the ortho (2) or meta (3) position, and R is an alkyl of up to four carbon atoms, an alkenyl of up to three carbon atoms, an alkynyl of up to three carbon atoms, or a haloalkyl selected from the group consisting of chloromethyl, bromomethyl, 2-chloroethyl and 2-bromoethyl.

4,269,984
BIOCIDAL MERCAPTOTHIADIAZOLE HALOACRYLYLNITRILE COMPOUNDS

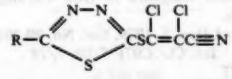
Raymond A. Felix, Richmond, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 25, 1980, Ser. No. 172,355

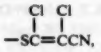
Int. Cl.[3] **A01N** *43/82;* **C07D** *285/12*

U.S. Cl. 548—142 **2 Claims**

1. A compound having the structural formula



wherein R is selected from the group consisting of methyl, ethyl, propyl, butyl,



phenyl and substituted phenyl wherein the substituents are selected from the group consisting of $-CH_3$, $-CF_3$, $-NO_2$, —Br and —Cl.

4,269,985
PROCESS FOR THE PREPARATION OF 2-AMINO-5-NITROTHIAZOLE

Dah-Chieh O. Cheng, and Kim S. Chamberlin, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 30, 1980, Ser. No. 173,537

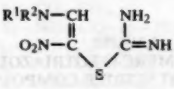
Int. Cl.[3] **C07D** *277/38*

U.S. Cl. 548—191 **10 Claims**

1. Process for the preparation of 2-amino-5-nitrothiazole which comprises the steps of:

A. Halogenating a compound having the formula $O_2NCH{=}CHNR^1R^2$ to obtain a compound having the formula $O_2N(X)C{=}CHNR^1R^2.HX$ and/or $O_2N(X)CHCH(X)NR^1R^2$;

B. Reacting the product of A with thiourea to obtain a compound having the formula



HX and

C. Contacting the product of B with water; wherein R^1 and R^2 are each alkyl containing up to about 4 carbon atoms or in combination they can be pentamethylene or 3-oxapentamethylene and X is Cl or Br.

4,269,986
HYDROXYACETYL OXAZOLIDINE HERBICIDAL ANTIDOTES

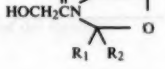
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Apr. 25, 1980, Ser. No. 143,665

Int. Cl.[3] **C07D** *263/04;* **A01N** *43/76*

U.S. Cl. 548—215 **2 Claims**

1. A compound of the formula



in which R_1-R_4 are each independently selected from the group consisting of hydrogen and alkyl having 1–4 carbon atoms.

4,269,987
PURIFICATION OF TRIAZOLES

Richard P. Carr; Ashok K. Nanda, both of Cincinnati, Ohio; Charles A. Schneider, Villa Hills, Ky., and Girish K. Malhotra, Cincinnati, Ohio, assignors to The Sherwin-Williams Company, Cleveland, Ohio

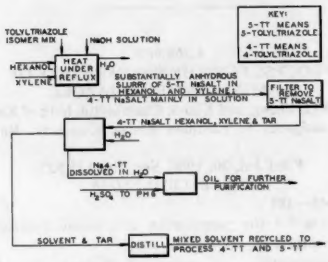
Filed Jun. 13, 1979, Ser. No. 48,530

Int. Cl.[3] **C07D** *249/16, 249/18*

U.S. Cl. 548—257 **7 Claims**

1. A method for purifying a benzo-/tolyl-triazole composition, which method includes the steps of producing a substantially anhydrous slurry in an alcohol of an alkali metal or of an alkaline earth metal salt of the triazole to be purified, with the

proviso that the salt is not a magnesium salt when the triazole is a tolyl triazole, separating purified triazole salt solids from



the slurry and washing the purified triazole salt solids with an alcohol.

4,269,988

BIOCIDAL MERCAPTOTRIAZOLE HALOACRYLYLNITRILE COMPOUNDS

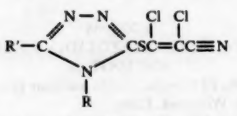
Raymond A. Felix, Richmond, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 25, 1980, Ser. No. 172,328

Int. Cl.[3] **A01N** *43/64;* **C07D** *249/12*

U.S. Cl. 548—263 **2 Claims**

1. A compound having the structural formula



wherein R and R′ are independently selected from the group consisting of methyl, ethyl, propyl, butyl, ethenyl, propenyl, butenyl, phenyl and substituted phenyl wherein the substituents are selected from the group consisting of $—NO_3$, $—CH_3$, $—CF_3$, —Cl and —Br.

4,269,989

PROCESS FOR THE PREPARATION OF BENZIMIDAZOLONE-(2)

Hartmut Heise, Bad Soden am Taunus; Ernst Hille, Kelkheim; Reinhard Wagner, Wiesbaden, and Kurt Kümmerle, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 19, 1979, Ser. No. 105,106

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1978, 2855226

Int. Cl.[2] **C07D** *235/26*

U.S. Cl. 548—305 **13 Claims**

1. In a process for the preparation of benzimidazolone-(2) by heating o-phenylenediamine and an excess of urea in water to a temperature of at least 90° C., the improvement comprising heating o-phenylenediamine and an excess amount of urea, the molar ratio of urea to o-phenylenediamine being up to 1.5:1, and maintaining the pH in a range of from 4 to 9 throughout the reaction.

4,269,990

1-ACYL-2-IMIDAZOLINES AND THEIR MANUFACTURE

Hans-Joachim May, Neustadt, and Horst Koenig, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

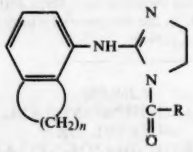
Continuation of Ser. No. 31,032, Apr. 18, 1979, abandoned, which is a continuation of Ser. No. 846,814, Oct. 31, 1977, abandoned. This application Dec. 5, 1979, Ser. No. 100,655

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1976, 2652004

Int. Cl.[3] **C07D** *233/50, 401/06, 405/06, 409/06*

U.S. Cl. 548—315 **6 Claims**

1. A 1-acyl-2-imidazoline of the formula



I

where n is 3 or 4 and R is hydrogen, alkyl of 1 to 4 carbon atoms (which is unsubstituted, or is monosubstituted, disubstituted or trisubstituted by halogen, alkoxy of 1 to 4 carbon atoms, alkoxycarbonyl, where alkyl is of 1 or 2 carbon atoms, or phenoxy), cycloalkyl of 3 to 7 carbon atoms in the ring, alkoxy (where alkyl is of 1 to 8 carbon atoms, and which is unsubstituted or monosubstituted, disubstituted or trisubstituted by halogen, or monosubstituted by alkoxy of 1 to 4 carbon atoms), cycloalkoxy of 3 to 10 carbon atoms in the ring (which is unsubstituted or substituted by alkyl of 1 to 4 carbon atoms), alkenyloxy of 3 or 4 carbon atoms, alkoxycarbonyl, where alkyl is of 1 or 2 carbon atoms, benzyloxy, methoxybenzyloxy, chlorobenzyloxy, nitrobenzyloxy, phenoxy, nitrophenoxy, phenyl and phenylalkyl of 7 or 8 carbon atoms (where phenyl is unsubstituted or monosubstituted, disubstituted or trisubstituted by alkyl of 1 to 4 carbon atoms, trifluoromethyl, halogen, alkoxy of 1 to 4 carbon atoms, methylenedioxy, ethylenedioxy or phenyl), phenylalkenyl of 8 or 9 carbon atoms (which is unsubstituted or monosubstituted, disubstituted or trisubstituted by halogen, or alkoxy of 1 to 4 carbon atoms), thienyl, furyl, pyridyl or chloropyridyl.

4,269,991

NOVEL MERCAPTOORGANOSILOXANES

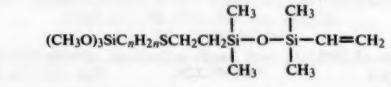
Gary R. Homan, Midland, Mich., and Louis H. Toporcer, Twinsburg, Ohio, assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 3, 1979, Ser. No. 99,251

Int. Cl.[3] **C07F** *7/08, 7/18*

U.S. Cl. 556—427 **4 Claims**

1. A compound of the formula,



wherein n has a value of from 1 to 3 inclusive.

4,269,992
PREPARATION OF HYDROLYZABLE POLYSILOXANE-POLYOXYALKYLENE BLOCK COPOLYMERS

Carl J. Litteral, Bethal, Conn., and David L. Mullins, Williamstown, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 28, 1977, Ser. No. 865,127
Int. Cl.³ C07F 7/18
U.S. Cl. 556—446 **14 Claims**

1. A process for producing a hydrolyzable polysiloxane-polyoxyalkylene block copolymer which comprises refluxing a reaction mixture containing:

(a) a polydihydrocarbonsiloxane comprising units of the formula R_2SiO, wherein R is a monovalent hydrocarbon group, and containing at least one halogen group bonded directly to at least one silicon atom of the polydihydrocarbonsiloxane,

(b) a polyoxyalkylene alcohol of the formula:

$$HO(C_nH_{2n}O)_vY$$

wherein

n has a value of 2 or 3, v is an integer of from about 5 to about 200, and

Y is a terminal group selected from the class cnsisting of alkyl, alkenyl, aryl and aralkyl radicals, and

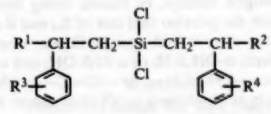
(c) a solvent selected form the group consisting of alkyl halides and alkenyl halides having boiling points at atmospheric pressure of from about 25° C. to about 130° C.

4,269,993
DIARALKYLDICHLOROSILANES

Nobumasa Ohtake; Isao Koga, both of Yokohamashi, and Yohji Terui, Chibashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Oct. 15, 1979, Ser. No. 84,574
Int. Cl.³ C07F 7/08
U.S. Cl. 556—450 **13 Claims**

1. Di-β-phenylalkyldichlorosilanes expressed by the general formula



(I)

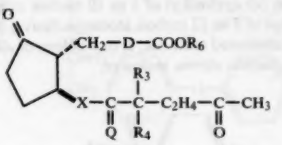
wherein R^1 and R^2 each represent an alkyl group of 1 to 4 carbon atoms or one of them represents hydrogen atom and the other represents an alkyl group of 1 to 4 carbon atoms, and R^3 and R^4 each represent hydrogen atom.

4,269,994
13,14-DIHYDRO-INTER-PHENYLENE-11-DEOXY-19-OXO-PGE$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979, Pat. No. 4,228,104.
This application Mar. 20, 1980, Ser. No. 132,227
Int. Cl.³ C07C 177/00
U.S. Cl. 560—53 **4 Claims**

1. A compound of the formula



wherein D is

(1) —(m—Ph)—$(CH_2)_2$—, or

(2) —(m—Ph)—O—CH_2—,

wherein —(m—Ph)— is inter-meta-phenylene;

wherein Q is α—OH:β—R_5 or α—R_5:β—OH, wherein R_5 is hydrogen or methyl;

wherein R_6 is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,

(g) —(p—Ph)—CO—CH_3,

(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,

(i) —(p—Ph)—NH—CO—(p—Ph),

(j) —(p—Ph)—NH—CO—CH_3,

(k) —(p—Ph)—NH—CO—NH_2,

(l) —(p—Ph)—CH=N—NH—CO—NH_2,

(m) β-naphthyl,

(n) —CH_2—CO—R_{28},

wherein (p—Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and

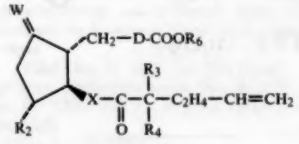
wherein X is —CH_2CH_2—

4,269,995
19,20-DIDEHYDRO-13,14-DIHYDRO-PG$_2$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 26,066, Apr. 2, 1979, Pat. No. 4,243,611.
This application Oct. 17, 1979, Ser. No. 85,621
Int. Cl.³ C07C 177/00
U.S. Cl. 560—121 **1 Claim**

1. A compound of the formula



wherein D is

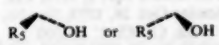
(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,

(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,

(3) cis—CH_2—CH=CH—CH_2—CH_2—,

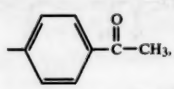
(4) trans—$(CH_2)_3$—CH=CH—, wherein g is zero, one, 2, or 3;

wherein Q is

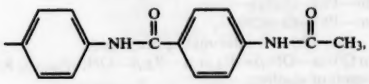


wherein R_5 is hydrogen or methyl,

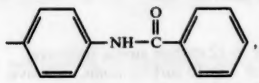
wherein R_6 is (a) hydrogen, (b) alkyl of one to 12 carbon atoms, inclusive, (c) cycloalkyl of 3 to 10 carbon atoms, inclusive, (d) aralkyl of 7 to 12 carbon atoms, inclusive, (e) phenyl, (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive;



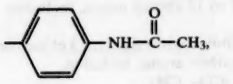
(g)



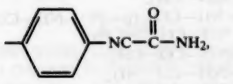
(h)



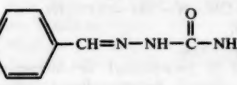
(i)



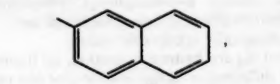
(j)



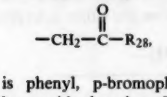
(k)



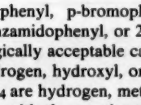
(l)



(m)



(n)



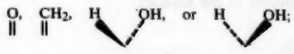
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl;

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein W is



and wherein X is $-CH_2CH_2-$.

4,269,996

19-HYDROXY-CIS-4,5-DIDEHYDRO-PG$_1$ ANALOGS

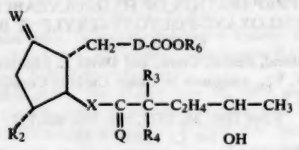
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,899, Apr. 2, 1979, Pat. No. 4,228,104. This application Oct. 26, 1979, Ser. No. 88,448

Int. Cl.^{3} C07C *177/00*

U.S. Cl. 560—121 **2 Claims**

1. A compound of the formula



wherein D is cis—CH_2—CH=CH—CH_2—CH_2—, wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl, wherein R_6 is

(a) hydrogen,

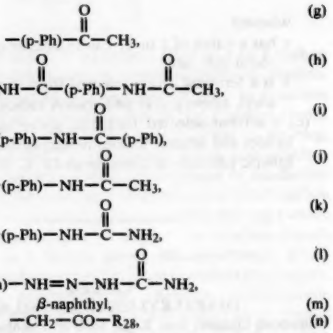
(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive;



(m) β-naphthyl,

(n) $-CH_2-CO-R_{28}$,

wherein (p-Ph) is para-phenyl or inter-para-phenylene and R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation; wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl; wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; wherein W is oxo, methylene, α-OH:β-H, or α-H:β-OH; and wherein X is cis- or trans—CH=CH—, or —C≡C—, with the proviso that R_6 is not hydrogen or alkyl of one to 12 carbon atoms, inclusive, when:

R_2 is hydroxy, R_3 and R_4 are hydrogen, Q is α-OH:β-H, W is oxo or α-OH:β-H, and D is cis—CH=CH—CH_2—$(CH_2)_g$—CH_2— and X is trans—CH=CH— or R_2, R_3, and R_4 are hydrogen, Q is α-OH:β-H; W is oxo; D is cis—CH=CH—CH_2—$(CH_2)_g$—CH_2— and X is trans—CH=CH—.

4,269,997

TREATMENT OF UREA SOLUTIONS

Primo Pastormerlo, Mortara, Italy, assignor to Stamicarbon B.V., Netherlands

Filed Jul. 11, 1979, Ser. No. 56,551

Claims priority, application Italy, Jul. 24, 1978, 26020 A/78

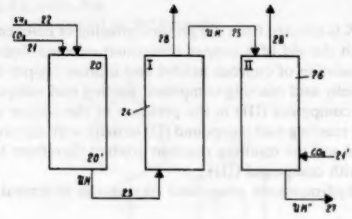
Int. Cl.^{3} C07C *126/02*

U.S. Cl. 564—73 **4 Claims**

1. A process for the treatment of urea solutions obtained from high yield synthesis reactors wherein ammonia in excess over the stoichiometric ratio and carbon dioxide are reacted under pressure and at high temperature, and containing in

addition to urea, free ammonia, water, unreacted ammonium carbamate, and other by-products, comprising:

(a) a first distillation step in which a substantial amount of free ammonia is distilled from the urea solution and the unreacted ammonium carbamate only partially decomposed, comprising heating said solution at a temperature of between 190°–230° C. at a pressure of at least 100 bars for a period less than 50 seconds resulting in the upward flow of said urea solution concurrently with gaseous material, and



(b) a second decomposition by stripping and distillation step in which a substantial amount of the ammonium carbamate is decomposed and the remaining NH_3 is distilled from the urea solution, comprising heating said solution at a temperature of 190°–230° C. at a pressure of at least 100 bars for a period of at most 60 seconds while the urea solution is flowing downwards and in countercurrent contact with the gases produced therefrom.

4,269,998

PRODUCTION OF DIALKYL FORMAMIDE

Tamotsu Imai, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Feb. 19, 1980, Ser. No. 122,153
Int. Cl.³ C07C *102/00*
U.S. Cl. 564—132 **15 Claims**

1. A process for the preparation of dialkyl formamide which comprises reacting dialkyl amine with carbon dioxide and hydrogen in the presence of a transition metal hydrogenation catalyst and a promoter comprising an alkali metal hydroxide or alkali metal carbonate, and recovering the resultant dialkyl formamide.

4,269,999

Patent Not Issued For This Number

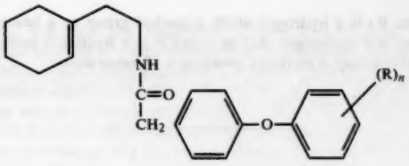
4,270,000

PROCESS FOR PREPARING 3-PHENOXY MORPHINANS

Ernest Mohacsi, Nutley, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 74,183, Sep. 10, 1979, which is a division of Ser. No. 914,656, Jun. 12, 1978, Pat. No. 4,194,044, which is a continuation-in-part of Ser. No. 811,233, Jun. 29, 1977, Pat. No. 4,113,729, which is a continuation-in-part of Ser. No. 748,022, Dec. 6, 1976, abandoned. This application Aug. 18, 1980, Ser. No. 179,207
Int. Cl.³ C07C *103/78*
U.S. Cl. 564—174 **2 Claims**

1. A compound of the formula:



wherein R is halo, lower alkyl, nitro, lower alkoxy, hydroxy or hydrogen; and n is an integer from 1 to 5.

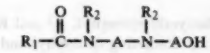
4,270,001

QUATERNARIES OF HYDROXYALKYLAMINOALKYLAMIDES

Derek Redmore, Ballwin, and Benjamin T. Outlaw, Webster Groves, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 684,711, May 10, 1976, Pat. No. 4,060,553. This application Jul. 11, 1977, Ser. No. 814,572
Int. Cl.³ C07C *103/78, 103/38*
U.S. Cl. 564—186 **6 Claims**

1. Quaternaries of hydroxyalkylaminoalkylamides of the general formula



where R_1 is a hydrocarbon radical selected from the group consisting of alkyl, aryl, aralkyl and alkaryl, R_2 is hydrogen, methyl or hydroxyethyl and A is alkylene.

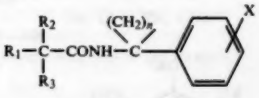
4,270,002

N-(PHENYLCYCLOALKYL)ACETAMIDE DERIVATIVES, AND THEIR PRODUCTION AND USE

Osamu Kirino, Hyogo; Shunichi Hashimoto, Sonehigashi; Hiroshi Matsumoto, Hyogo, and Hiromichi Oshio, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 23, 1979, Ser. No. 87,642
Claims priority, application Japan, Nov. 9, 1978, 53-138510
Int. Cl.³ C07C *103/34, 103/375;* A01N *37/18*
U.S. Cl. 564—221 **7 Claims**

1. A compound of the formula:



wherein R_1 and R_2, which may be the same or different, are each a C_1–C_3 alkyl group, a chloromethyl group or a halogen

atom, R_3 is a hydrogen atom, a methyl group or a halogen atom, n is an integer of 2 to 5 and X is a hydrogen atom, a methyl group, a methoxy group or a chlorine atom.

4,270,003

HYDROQUINONE DERIVATIVES AND PREPARATION THEREOF

Yoshiji Fujita; Takashi Ohnishi, and Takashi Nishida, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

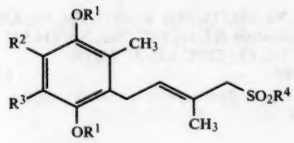
Filed Jul. 30, 1979, Ser. No. 62,031

Claims priority, application Japan, Aug. 2, 1978, 53-94727; May 8, 1979, 54-56677

Int. Cl.[3] **C07C** *147/08, 43/20, 43/205*

U.S. Cl. 568—33 **15 Claims**

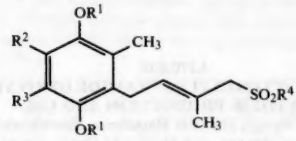
1. A hydroquinone compound having the structural formula:



(I)

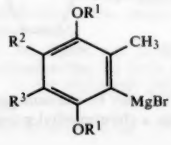
wherein R^1 is methoxyethoxymethyl, R^2 and R^3 are each selected from the group consisting of methyl and methoxy, and R^2 and R^3, taken together with the carbon atoms from which they depend, can form a benzene ring, and R^4 is a lower alkyl substituted or unsubstituted aromatic hydrocarbon having from 6 to 10 nuclear carbons.

6. A process for preparation of the hydroquinone compound having the structural formula:



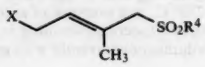
(I)

wherein R^1 is selected from the group consisting of lower alkyl, lower alkoxy lower alkyl and methoxyethoxymethyl, R^2 and R^3 are each selected from the group consisting of methyl and methoxy, and R^2 and R^3, taken together with the carbon atoms from which they depend, can form a benzene ring, and R^4 is a lower alkyl substituted or unsubstituted aromatic hydrocarbon having from 6 to 10 nuclear carbons comprising reacting a compound having the structural formula:



(II)

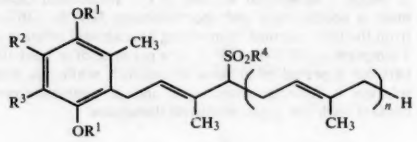
wherein R^1, R^2 and R^3 are as defined above, with a compound having the structural formula:



(III)

wherein X is selected from the group consisting of halogen and tosyl, with the aid of a copper compound selected from the group consisting of cuprous halides and lithium copper chloride whereby said reacting comprises reacting said compound (II) with compound (III) in the presence of the copper compound, or reacting said compound (II) initially with the copper compound and the resulting reaction product therefrom being reacted with compound (III).

14. A hydroquinone compound having the structural formula:



wherein R^1, R^2, R^3 and R^4 are as defined in claim **1** and n is an integer of 1 to 11.

4,270,004

CHEMICAL PROCESS FOR THE PREPARATION OF 4-(6[1]-METHOXY-2[1]-NAPHTHYL)BUTAN-2-ONE

Carl J. Rose, London, and David Miller, Herts, both of England, assignors to Beecham Group Limited, England

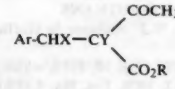
Division of Ser. No. 973,748, Dec. 26, 1978, Pat. No. 4,247,709. This application Oct. 11, 1979, Ser. No. 83,837

Claims priority, application United Kingdom, Jan. 7, 1978, 602/78

Int. Cl.[3] **C07C** *45/65, 67/313*

U.S. Cl. 568—314 **9 Claims**

1. A process for the preparation of 4-(6[1]-methoxy-2[1]-naphthyl)butan-2-one which process comprises the hydrogenation of a compound of the formula (I):



(I)

wherein Ar is a 6-methoxy-2-naphthyl group; X and Y represent a second bond between the carbon atoms to which they are attached; and $—CO_2R$ is a carboxylic acid ester group convertible to a CO_2H group by catalytic hydrogenation in the presence of a supported, noble, metal catalyst at about atmospheric pressure.

4,270,005
1,9-DIHYDROXYOCTAHYDROPHENANTHRENES AND INTERMEDIATES THEREFOR

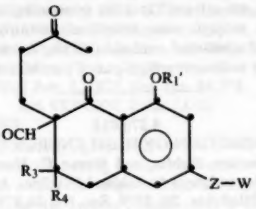
Thomas H. Althuis, Groton; Charles A. Harbert, Waterford; Michael R. Johnson, Gales Ferry, and Lawrence S. Melvin, Jr., Ledyard, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 851,503, Nov. 14, 1977, Pat. No. 4,188,495. This application Sep. 24, 1979, Ser. No. 78,474

Int. Cl.[3] **A01N** *35/00;* **C07C** *49/733*

U.S. Cl. 568—328 **14 Claims**

1. A compound of the formula



wherein

R'_1 is selected from hydrogen, alkanoyl of 1 to 6 carbon atoms and benzoyl;

R_3 is selected from hydrogen, methyl and ethyl;

R_4 is selected from hydrogen, alkyl of 1 to 6 carbon atoms and benzoyl;

Z is selected from:

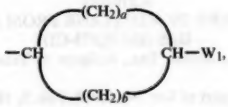
(a) alkylene having from one to nine carbon atoms;

(b) $-(alk_1)_m-X-(alk_2)_n-$ wherein each of (alk_1) and (alk_2) is alkylene having from 1 to 9 carbon atoms, with the proviso that the summation of carbon atoms in (alk_1) plus (alk_2) is not greater than 9;

m and n are each 0 or 1;

X is selected from O, S, SO and SO_2; and

W is selected from hydrogen, methyl, phenyl, monochlorophenyl, monofluorophenyl and



wherein W_1 is selected from hydrogen, phenyl, monochlorophenyl and monofluorophenyl; a is an integer from 1 to 5 and b is 0 or an integer from 1 to 4, with the proviso that the sum of a and b is not greater than 5.

4,270,006
PREPARATION OF ALIPHATIC CARBONYL COMPOUNDS

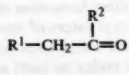
Gerd Heilen, Speyer; Axel Nissen, Leimen, and Otto Woerz, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 27, 1979, Ser. No. 106,884

Int. Cl.[3] **C07C** *45/45, 47/02, 49/04*

U.S. Cl. 568—396 **1 Claim**

1. In a process for the preparation of an aliphatic carbonyl compound by aldol condensation of a carbonyl compound of the formula I



I

where R^1 and R^2 are hydrogen or C_1–C_8-alkyl, in the presence of hydrogen and of a catalyst which possesses both condensing and hydrogenating properties, wherein a catalyst system is used wherein, the improvement which comprises: carrying out the process in the presence of an effective amount of a catalyst system wherein the active components are from 1 to 90 percent by weight of a noble metal of group VIII of the periodic table and from 10 to 99 percent by weight of an oxide or salt of a rare earth metal, or of a mixture of different oxides and/or salts of rare earth metals, said catalyst system having both condensing and hydrogenating properties, said process being conducted under pressure of from 1 to 100 bar and at a temperature of from 20° to 250° C.

4,270,007
PERFUME ALDEHYDES FROM HYDROFORMYLATION OF CARYOPHYLLENE

Jens Hagen, Ketsch, and Klaus Bruns, Krefeld-Traar, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Nov. 14, 1979, Ser. No. 94,278

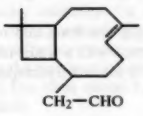
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1978, 2849720

Int. Cl.[3] **C07C** *47/445, 45/50*

U.S. Cl. 568—445 **1 Claim**

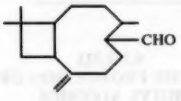
1. A mixture consisting essentially of the stereoisomers of the aldehydes

I



and

II



4,270,008
2-PROPYL-PENT-4-EN-1-AL

Jürgen Weber, Oberhausen; Wolfgang Bernhagen, Mülheim, and Helmut Springer, Oberhausen, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

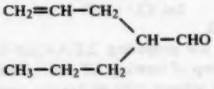
Filed Oct. 11, 1979, Ser. No. 83,893

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1978, 2844635

Int. Cl.[3] **C07C** *47/21*

U.S. Cl. 568—448 **2 Claims**

1. 2-propyl-pent-4-en-1-al of the formula



4,270,009

1,4-BIS-[(2-PROPYNYLOXY)-METHYL] CYCLOHEXANE

Silvia Dorn, Dielsdorf; Albert Pfiffner, and Rene Zurflüh, both of Bülach, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 43,204, May 29, 1979. This application Sep. 7, 1979, Ser. No. 73,336

Claims priority, application Switzerland, May 31, 1978, 5957/78

Int. Cl.[3] C07C *43/162*

U.S. Cl. 568—670 1 Claim

1. 1,4-Bis-[(2-propynyloxy)-methyl]-cyclohexane.

4,270,010

HYDROQUINONE BY HYDROLYSIS OF P-AMINOPHENOL OR SALTS

Efim Biller, Hochstrasse 28, Zurich, Switzerland

Filed Feb. 29, 1980, Ser. No. 125,959

Claims priority, application Switzerland, Mar. 1, 1979, 2045/79

Int. Cl.[3] C07C *37/045*

U.S. Cl. 568—767 6 Claims

1. Process of making hydroquinone from p-aminophenol or from salts of p-aminophenol with acids made by catalytic or electrolytic reduction of nitrobenzene, which process comprises

heating at a temperature of 190°–300° C. an aqueous solution containing 0.5 to 30% by weight of said p-aminophenol or p-aminophenol salt and containing 0.3–3 moles of organic sulfonic acid per mole of said p-aminophenol or p-aminophenol salt to form a reaction mixture containing hydroquinone, and

extracting said hydroquinone from said reaction mixture by contacting said mixture with a water-insoluble solvent for said hydroquinone to leave a hydroquinone-free aqueous mixture.

4,270,011

PROCESS FOR THE PRODUCTION OF TERTIARY BUTYL ALCOHOL

Yoshiharu Okumura, Kawagoe, and Katsumi Kaneko, Ooi, both of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 9, 1980, Ser. No. 157,689

Int. Cl.[3] C07C *29/04*

U.S. Cl. 568—899 3 Claims

1. A process for the production of tertiary butyl alcohol which comprises selectively reacting isobutylene in a C_4 hydrocarbon mixture with water by carrying out the reaction at a temperature not higher than 100° C. in the presence of a porous, acid-type cation exchange resin and a sulfone.

4,270,012

PREPARATION OF HNS FROM HNBB USING OXYGEN

Everett E. Gilbert, Morristown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 16, 1980, Ser. No. 112,585

Int. Cl.[3] C07C *79/10*

U.S. Cl. 568—931 10 Claims

1. A method for preparing 2,2',4,4',6,6'-hexanitrostilbene comprising the step of treating 2,2',4,4',6,6'-hexanitrobibenzyl in an appropriate solvent with an oxygen containing gas.

4,270,013

PROCESS FOR THE SEPARATION OF NITROTOLUENE ISOMERS

James W. Priegnitz, Elgin, and Arthur M. Landis, Carpentersville, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Oct. 19, 1979, Ser. No. 86,489

Int. Cl.[3] C07C *79/10*

U.S. Cl. 568—940 20 Claims

1. A process for separating para-nitrotoluene from a feed mixture comprising para-nitrotoluene and at least one other isomer of nitrotoluene, which process comprises contacting at adsorption conditions said mixture with an adsorbent comprising a type X zeolite containing chromium at the exchangeable cationic sites, or a type Y zeolite containing calcium at the exchangeable cationic sites, selectively adsorbing said para isomer to the substantial exclusion of the remaining isomers, and thereafter recovering high-purity para-nitrotoluene.

4,270,014

PRODUCTION OF HIGH ENERGY FUEL

Richard V. Norton, Dublin, and Steven C. Howe, Columbus, both of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Apr. 30, 1979, Ser. No. 34,879

Int. Cl.[2] C07C *13/28*

U.S. Cl. 585—22 5 Claims

1. A process for the production of exo-tetrahydrodicyclopentadiene which comprises:

(a) hydrogenating the endo dimer of cyclopentadiene containing a dispersed nickel hydrogenation catalyst to provide a crude endo-tetrahydrodicyclopentadiene derivative having a melting point of at least about 70° C.;

(b) contacting the crude product of (a) containing said catalyst with aluminum chloride and maintaining the contacted crude at a temperature of from about 100°–150° C. to effect the substantially complete conversion of said endo isomer to the corresponding exo isomer form; and

(c) separating said exo isomer from the sludge component of the isomerization reaction mixture.

4,270,015

MANUFACTURE OF ETHYLENE FROM SYNTHESIS GAS (D#75,673-C1)

John F. Knifton, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 8,988, Feb. 5, 1979, abandoned. This application Jul. 14, 1980, Ser. No. 167,875

Int. Cl.[3] C07C *1/00*

U.S. Cl. 585—324 12 Claims

1. A process for the synthesis of ethylene from mixtures of carbon monoxide and hydrogen which comprises the following steps:

(1) Contacting a mixture of carbon monoxide and hydrogen with one or more C_2–C_4 aliphatic carboxylic acids, the corresponding acid anhydrides, trifluoroacetic acid or the corresponding anhydride, and a ruthenium catalyst selected from the group consisting of ruthenium (IV) dioxide hydrate, ruthenium (VIII) tetraoxide, ruthenium acetate, ruthenium propionate, ruthenium acetyl acetonate, ruthenium chloride and ruthenium bromide, and a cocatalyst selected from the group consisting of cesium salts, quaternary ammonium and phosphonium salts and iminium salts, to form a reaction mixture;

(2) Heating said reaction mixture to temperatures between about 100° and 350° C., at superatmospheric pressures of 500 psi or greater to effect formation of predominantly the methyl, ethyl and propyl esters of said carboxylic acids,

(3) Isolating said formed ethyl ester and pyrolyzing said isolated formed ester under an inert atmosphere to yield ethylene and also regenerating the carboxylic acid coreactant.

4,270,016

METHOD OF PREPARING TRANS-, TRANS-, TRANS-1,5,9-CYCLODODECATRIENE

Genrikh A. Tolstikov, ulitsa Pushkina, 54, kv. 49; Usein M. Dzhemilev, ulitsa Dostoevskogo, 102/3, kv. 61, both of Ufa; Grigory I. Rutman, ulitsa Revoljutsionnaya, 7, kv. 6, Sterlitamak; Jury I. Michurov, prospekt Lenina, 13, kv. 4, Sterlitamak; Boris I. Pantukh, ulitsa Khudaiberdina, 162, kv. 89, Sterlitamak; Stanislav S. Shavanov, ulitsa Mira, 59, kv. 29, Sterlitamak; Sagid R. Rafikov, ulitsa Novaya Mostovaya, 25, kv. 9, Ufa; Sofia A. Egoricheva, ulitsa Nugumanova, 66a, kv. 23, Sterlitamak; Valery P. Juriev, ulitsa Dostoevskogo, 102/3, kv. 14, Ufa; Alexandr G. Liakumovich, ulitsa Galeeva, 10, kv. 8, Kazan; Valerian M. Sobolev, naberezhnaya M. Gorkogo, 46/50, kv. 185, Moscow; Boris S. Korotkevich, ulitsa Fortunatovskaya, 31/35, kv. 71, Moscow; Jury A. Shmuk, Leninsky prospekt, 13, kv. 31, Moscow, and Elena Y. Mandelshtamm, prospekt Mira, 72, kv. 2, Moscow, all of U.S.S.R.

Filed Jun. 1, 1979, Ser. No. 44,778

Int. Cl.³ C07C *2/42, 13/02*

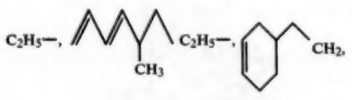
U.S. Cl. 585—366 **3 Claims**

1. A method of preparing trans-,trans-,trans-1,5,9-cyclododecatriene comprising cyclotrimerization of butadiene at a temperature within the range of from 50° to 150° C. in the presence of a catalytic system consisting of a compound of bivalent nickel, an organo-aluminium compound selected from the group consisting of compounds of formula (I) or (2)

$$R_3Al \quad (I)$$

$$R_2Al—X(R')_n \quad (2)$$

wherein R and R′ are selected from the group consisting of



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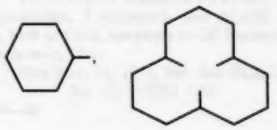


X is —O— when n=1, -N when n=2; and an activator, viz. a compound selected from the group consisting of compounds of formula (3) and (4);

$$R_3Si—OR' \quad (3)$$

wherein R is an alkyl; R′ is selected from the group consisting of C_6H_5—, C_6H_{11}—, an alkyl;

$$N(CRR'—CRR'')_3B \quad (4)$$

wherein R′ and R″ are selected from the group consisting of CH_3—, C_2H_5—, C_6H_{10}—, C_8H_{11}—, H—; R is H—.

4,270,017

PROCESS FOR SELECTIVELY PRODUCING PARA-XYLENE

Dean A. Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Feb. 16, 1979, Ser. No. 12,868

Int. Cl.³ B01J *27/14*

U.S. Cl. 585—437 **20 Claims**

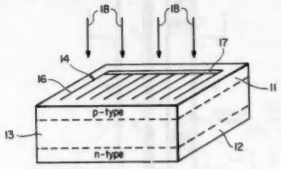
1. A process for preparing an aromatic alkylating catalyst which comprises contacting a silica polymorph with an acid or ammonium salt; mulling the silica polymorph with an inorganic refractory oxide; calcining the silica polymorph and inorganic refractory oxide; contacting the calcined silica polymorph and inorganic refractory oxide with a phosphorus compound; and calcining the resultant catalyst; said catalyst having an alkali content of less than about 1.3 milliequivalents per gram as available alkali.

4,270,018

AMORPHOUS SOLAR CELLS

James F. Gibbons, 320 Tennyson Ave., Palo Alto, Calif. 94301

Filed Dec. 26, 1979, Ser. No. 107,437
Int. Cl.[3] H01L *31/04*
U.S. Cl. 136—258 3 Claims



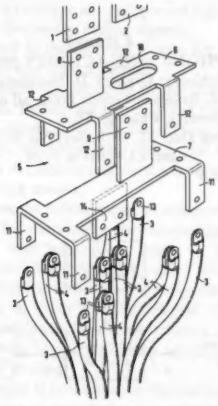
1. A solar cell comprising a n-type and p-type silicon single crystal or polycrystalline collecting layers separated by an amorphous layer that serves as a layer which absorbs the optical energy and generates carriers.

4,270,019

CONNECTING PIECE BETWEEN CABLES AND BUS BARS

Jürgen Thye, and Karl Höffner, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 18, 1979, Ser. No. 40,463
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1978, 2825037
Int. Cl.[3] H02B *1/20;* H01R *11/00*
U.S. Cl. 174—32 3 Claims



1. In a connector for connecting bus bars of different polarities with the ends of a fairly large number of cables, bunched to produce a low stray field, comprising at least two electrically conducting plates, each adapted for connection to a bus bar, and disposed, insulated from each other, in parallel planes, the improvement comprising, in a connector for use in the end-to-end connection of bus bars and cables:

at least one connecting strap attached to each plate pointing towards the direction of approach of the bus bars and adapted for connection to a bus bar, one of the connecting straps protruding through a cutout in the other plate; and

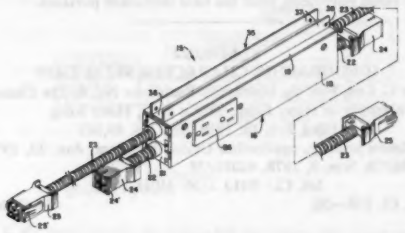
connecting lugs, pointing towards the direction of approach of the cable ends and adapted for connection to cable terminals on the cable ends, the connecting lugs attached to the plates and interleaved in such a way that the cables, when attached, produce a low stray field.

4,270,020

PARTITION WIRING SYSTEM

Max H. Kenworthy, Youngstown, and Melvin A. Textoris, Struthers, both of Ohio, assignors to GF Business Equipment, Inc., Youngstown, Ohio

Filed Nov. 21, 1979, Ser. No. 96,312
Int. Cl.[3] H02G *3/00*
U.S. Cl. 174—48 25 Claims



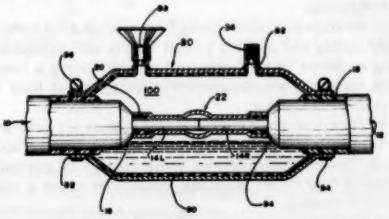
1. A wiring system for a partition assembly having a plurality of elevated panels provided with end edges attached to intermediate upright means including, an electrical assembly associated with at least two adjacent said panels, each said electrical assembly including a housing mounted beneath one said panel, each said housing provided with opposed side walls and end walls, an exposed outlet mounted through at least one said side wall, each said housing including a short flexible conduit extending from one end wall and a long flexible conduit extending from the other end wall, said short conduits extendable to points short of the juxtaposed said intermediate upright means a distance substantially equal to the distance said long conduit connectors are extendable beyond their juxtaposed said intermediate upright means, said conduits on each said housing terminating in mating connectors, opposed conduits of adjacent said housings having mating connectors joined to said conduit connectors of the adjacent said housings, hanger means mounted beneath said panels, and separate removable cover means attachable to said hanger means on each side of said panels to provide an enclosed raceway beneath said panels containing said electrical assemblies whereby, when all said mating conduit connectors are joined said conduits are substantially fully extended.

4,270,021

HIGH VOLTAGE CABLE SPLICE USING CONDENSATION REACTION POLYMERIC INSULATION

Marvin H. Gold, 5050 Dory Way, Fair Oaks, Calif. 95628

Division of Ser. No. 874,105, Feb. 1, 1978. This application Dec. 6, 1979, Ser. No. 100,931
Int. Cl.[3] H02G *15/08;* H01R *5/02*
U.S. Cl. 174—84 R 11 Claims



1. Spliced high voltage cable prepared from a splicing of two

insulation and conductor portions, said spliced cable comprising:

electrically and mechanically joined conductor portions, and

a monolithic cured polymeric insulation splice prepared by the reaction of a castable mixture comprising a liquid polyolefin having pendent groups capable of entering into a condensation reaction, a chain extension agent reactive with said pendent groups, and a particulated solid saturated polyolefin with the two insulation portions.

4,270,022

IDEOGRAPHIC CHARACTER SELECTION

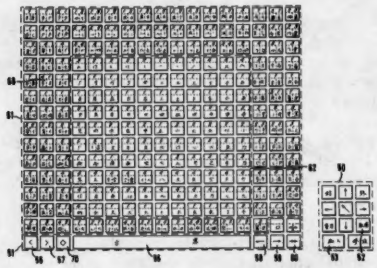
Shiu C. Loh, Flat 6b, University Residence No. 4, The Chinese University of Hong Kong, Shatin N.T., Hong Kong

Filed Jun. 18, 1979, Ser. No. 49,089

Claims priority, application United Kingdom, Jun. 22, 1978, 27636/78; Nov. 3, 1978, 43081/78

Int. Cl.[3] B41J 3/50; H04L 3/00

U.S. Cl. 178—30 14 Claims



2. A character selection keyboard for an ideographic language of which the characters can each comprise one or more of a set of character components as herein defined, the keyboard comprising an array of character component keys each bearing a symbol corresponding to a character component of which some of said components have separate linguistic identity and can accordingly be used in said ideographic language in isolation to constitute characters in said ideographic language, and wherein said components having separate linguistic identity are all depicted within a part of the array which is disposed substantially centrally of the array and wherein those components, not having separate linguistic identity, are disposed outwardly of said central part of the array.

4,270,023

CYLINDRICAL SPEAKER MECHANISM

Harold N. Beveridge, 505 E. Montecito St., Santa Barbara, Calif. 93103

Filed May 31, 1979, Ser. No. 44,127

Int. Cl.[3] H04R 5/02

U.S. Cl. 179—1 GA 13 Claims

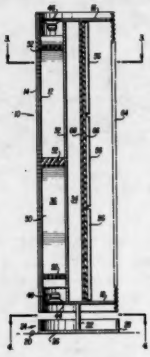
1. A loudspeaker for use in a room having a ceiling and a floor comprising:

a cabinet extending substantially from near said floor toward said ceiling and above a listener region, said cabinet having a cabinet vertical axis, said cabinet having a cabinet top surface, a cabinet bottom surface, and at least one vertical side surface;

a waveform generator housed in said cabinet for generating a cylindrical wave front from said vertical side surface of said cabinet, said generator being capable of generating audible frequencies including frequencies above a cross-over frequency;

a first low frequency generator housed in said cabinet proximate said cabinet top surface for generating frequencies including frequencies below said cross-over frequency; and,

a second low frequency generator housed in said cabinet proximate said cabinet bottom surface for generating



frequencies including frequencies below said cross-over frequency, said first and said second low frequency generators being essentially vertically unsymmetrical with respect to the listener region.

4,270,024

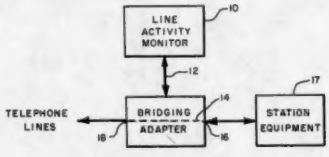
TELEPHONE LINE ACTIVITY MONITOR

Peter Theis, McHenry; Gregory D. Buchberger, Mt. Prospect, and William J. Krueger, Vernon Hills, all of Ill., assignors to Morgan Electronics, Chicago, Ill.

Filed Dec. 22, 1978, Ser. No. 972,326

Int. Cl.[3] H04M 3/36

U.S. Cl. 179—8 A 12 Claims



1. A portable monitor for use with station equipment connected to a plurality of telephone lines by way of first and second mating connectors directly associated with said station equipment, said monitor comprising:

monitor means including a portable computer programmed to tabulate a plurality of telephone line traffic parameters representative of the line activity and usage patterns of a predetermined maximum number of monitor input channels;

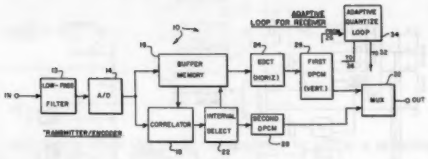
adapter means for connecting said monitor input channels to the plurality of telephone lines, said adapter means including first connector means for mating with said first connector and second connector means for mating with said second connector, said adapter means further including means for interconnecting the station equipment and the telephone lines.

4,270,025

SAMPLED SPEECH COMPRESSION SYSTEM

James M. Alsup, and Harper J. Whitehouse, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 9, 1979, Ser. No. 28,406
Int. Cl.[3] G10L 1/00
U.S. Cl. 179—15.55 R 3 Claims



1. A sampled speech compression and expansion system analogous to a two-dimensional processing of speech, or other type of audio signal, in that the processing is performed on sequences of sample data, each sequence comprising a line of data consisting of a plurality of samples, comprisng transmit-/encode apparatus and receive/decode apparatus, wherein the transmit/encode apparatus comprises:

means, adapted to receive an analog input signal, for filtering through low-frequency analog signals;

means, connected to the filtering means, for converting the analog signals into digital signals;

means, whose input is connected to the output of the converting means, for storing the digitized signals;

means, having inputs from the converting means and the storing means, for correlating the digital signal received directly from the converting means with a delayed signal from the storing means;

interval select means, whose input is connected to the output of the means for correlating, for comparing the autocorrelation value with subsequent peaks in the correlation function, identifying those peak values which are greater than a specified fraction of the autocorrelation value, and selecting one of them and the interval of time and the number of samples to the autocorrelation peak, the interval-select means having an output which is connected to the means for storing;

means, whose input is connected to the storing means so that specified blocks of stored signal are routed to it, with a starting point defined by the selected interval value, for performing an even discrete cosine transform (EDCT) of the stored signal;

a first means, whose input is connected to the output of the EDCT means, for differential pulse code modulation (DPCM) of its input signal;

a second means, whose input is connected to the output of the interval-select means, for differential pulse code modulation of its input signal;

each DPCM means determining a set of quantization coefficients according to a predetermined set of quantization rules; the speech compression system further comprising:

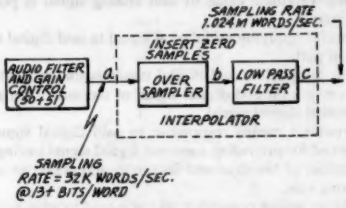
means, having an input connected to the output of the first and second modulating means, for multiplexing the two DPCM signals.

4,270,026

INTERPOLATOR APPARATUS FOR INCREASING THE WORD RATE OF A DIGITAL SIGNAL OF THE TYPE EMPLOYED IN DIGITAL TELEPHONE SYSTEMS

Kishan Shenoi, Fairfield, and Bhagwati P. Agrawal, Shelton, both of Conn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 28, 1979, Ser. No. 98,105
Int. Cl.[3] G10L 1/00
U.S. Cl. 179—15.55 R 27 Claims



1. An interpolator apparatus for increasing the word rate of an input digital signal, said input digital signal consisting of a plurality of digital words, each having the same number of given bits, with said rate of said digital signal being of a predetermined value, comprising:

interface means responsive to said digital signal for repeating each of said words a given number of times at said increased word rate, with a given separation region between said words as repeated, said interface means including means for inserting a fixed number of zero bit words between said words as repeated wherein said fixed number of zero bit words occupy said given region, with each of said zero bit words the same number of given bits as each digital word, to thereby provide an output signal of a predetermined pattern,

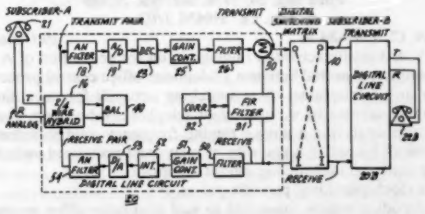
low pass digital recursive filter means responsive to said output signal of said predetermined pattern, to provide at an output of said recursive filter, a filtered digital signal at said increased rate, manifesting a plurality of digital words, each of a lesser number of bits than said words of said output signal with each word manifesting a value providing a smooth transition between successive words at said increased rate.

4,270,027

TELEPHONE SUBSCRIBER LINE UNIT WITH SIGMA-DELTA DIGITAL TO ANALOG CONVERTER

Bhagwati P. Agrawal, Shelton, and Kishan Shenoi, Fairfield, both of Conn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 28, 1979, Ser. No. 98,103
Int. Cl.[3] H04M 1/00
U.S. Cl. 179—81 R 5 Claims



1. A telephone subscriber line circuit for coupling a subscriber to a digital transmission path in a telephone switching system comprising in combination:

two-to-four wire converter means coupled to a near-end

subscriber line to provide a transmit path and a receive path for said line,

analog-to-digital converter means for converting near-end analog signals coupled thereto from said two-to-four wire converter in said transmit path, said converter means operative to provide a digital signal comprising a plurality of digital words, each having the same number of bits with each word manifesting a weighted value of said near-end analog signal, with at least one bit in each word indicative of a sign bit indicating whether said word and therefore said weighted value of said analog signal is positive or negative,

means for applying said digital signal to said digital transmission path,

means coupled to said digital transmission path adapted to receive a far end digital signal of the same format as said applied digital signal,

interpolator means responsive to said digital signal as received for providing a second digital signal having a lesser number of bits than said far digital signal and an increased word rate,

digital to analog converter means in said receive path of said line circuit and coupled to said interpolating means to provide an analog signal, said converter means comprising:

adding means for receiving said second digital signal and adding to each word of said signal an error signal, to provide at an output, a modified word having a given number of bits including a sign bit manifesting the sum of a word in said second digital signal as modified by said error signal,

sign detecting means responsive to said modified word for providing an output pulse when the sign of said word is indicative of one value as positive or negative, said output pulse indicative of the value of said analog signal as being positive or negative,

feedback control means responsive to the sign of said modified word as detected for inverting said sign and adding the same to said modified word to provide said error signal for application to said adding means to cause each successive digital word as applied to said adding means to be modified by said error signal as based on the sign of said previous modified word, to cause said sign detecting means to provide said output pulse for each word in said second digital signal having the same sign bit,

low pass filter means coupled to said sign detecting means for providing a replica of said analog signal as derived from said far end digital signal,

means for coupling said far end analog signal to said two or four wire converter means to enable a subscriber to receive and therefore respond to said far end analog signals.

4,270,028
DIGITALLY ACTIVATED RINGING CIRCUIT FOR GENERATION OF AC VOLTAGES

John S. Young, Scottsdale, Ariz., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sep. 24, 1979, Ser. No. 78,330
Int. Cl.³ H04M 3/02
U.S. Cl. 179—84 R **10 Claims**

1. A digitally activated ringing circuit for generation of AC voltages connected between a telephone office central processor and a telephone office switching network for providing ringing service to a plurality of telephone subscribers each subscriber having a unique ringing frequency, said switching network including a plurality of relays and associated switching contacts, said ringing circuit comprising:

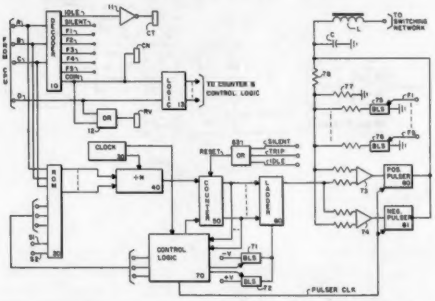
a clock providing periodic pulses;

decoding means connected to said telephone office central processor for determining a particular ringing frequency of said plurality to be applied to said switching network and selectively attenuating each ringing frequency;

frequency approximating means connected to said decoding means and to said clock, and operated in response to a request for one particular frequency of said plurality of unique frequencies to produce a binary number representing an approximation to an instantaneous value representing the sinusoidal ringing signal to be produced;

counting means connected to said frequency approximating means and operated in response to said periodic pulses divided by said binary number to produce a binary value representing an instantaneous approximation of the voltage of said sinusoidal ringing signal;

resistive network means connected to said counting means for converting said binary value representation to an analog representation of said binary number;



pulsing means connected between said resistive network means and said telephone office switching network and operated in response to said analog representation of said binary number to produce a series of pulses of a first characteristic and alternatively operated to produce a series of pulses of a second characteristic, each of said series of said pulses providing an incremental quantity of current according to said binary value representing said approximation of the voltage of said ringing signal, via said telephone office switching network for transmission to a particular telephone subscriber providing said subscriber with said ringing service.

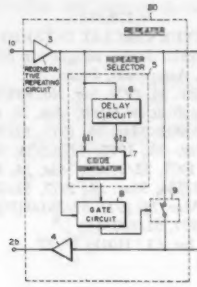
4,270,029
SELECTION SYSTEM FOR DIGITAL SIGNAL REPEATERS

Masanori Sato, Machida; Hiroharu Wakabayashi, Nakamura; Yoshihiro Ejiri, Tokyo, and Hitoshi Yamamoto, Kawasaki, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1979, Ser. No. 20,873
Claims priority, application Japan, Mar. 23, 1978, 53/32344; Mar. 23, 1978, 53/32345
Int. Cl.³ H04B 1/60
U.S. Cl. 179—175.31 R **7 Claims**

1. A digital signal repeater selecting system for a digital signal transmission system equipped with a plurality of digital signal repeaters disposed on a transmission line at desired intervals, comprising in each of the repeaters: a delay circuit having a particular delay time corresponding to an integral multiple of the unit code length of a digital signal and assigned to the repeater and having its input terminal connected to the transmission line; and a code comparator for comparing the input signal to and the output signal from the delay circuit with each other to produce a predetermined output signal when both signals are determined by the code comparator to be substantially identical with each other, wherein when a repeater selecting code train repeating in synchronism with the

delay time is provided on the transmission line, the repeater to which the delay time is assigned produces the predetermined



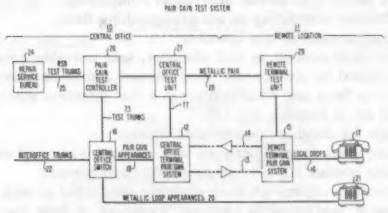
output signal from the code comparator to allow a selecting operation of the repeater.

4,270,030

TESTING OF SUBSCRIBER LOOP PAIR GAIN SYSTEMS

Stephen J. Brolin, Livingston; Jeffrey L. Gottesman, Morristown; Dennis H. Morgen, Roseland, and Kenneth H. Swanson, Mendham, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 27, 1979, Ser. No. 97,699
Int. Cl.³ H04B *3/46*; H04J *3/14*
U.S. Cl. 179—175.2 D **21 Claims**



1. A pair gain subscriber loop testing system for testing subscriber loops implemented by a combination of carrier-derived channels in at least one pair gain subscriber loop transmission system and local drop wires from the remote terminal of said transmission system to subscriber stations, said testing system

CHARACTERIZED BY

drop testing means for extending a metallic path from a central office testing facility to the local drop of a tested subscriber, and

channel testing means for simultaneously testing the carrier-derived channel corresponding to said tested subscriber.

4,270,031

CIRCUIT BREAKER INTERLOCKING MECHANISM

Russell T. Borona, Seymour, and Kenneth R. Coley, Fairfield, both of Conn., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 28, 1979, Ser. No. 24,768
Int. Cl.³ H01H *9/26*
U.S. Cl. 200—50 C **5 Claims**

1. A power transfer device for switching from one power supply to another,

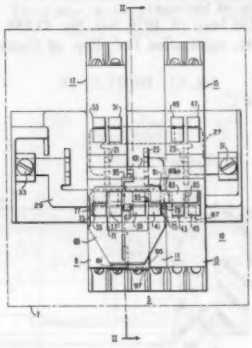
(a) four circuit breakers in side-by-side fixed alignment in a row, each of the circuit breakers having a top wall and a handle projecting therefrom and movable between "on" and "off" positions,

(b) the first and second circuit breakers in the row having separate line terminals and common load terminals,

(c) the third and fourth circuit breakers in the row having separate neutral terminals and common load terminals,

(d) first tie means interconnecting the handles of the first and fourth circuit breakers into pairs for simultaneous movement,

(e) second tie means interconnecting the handles of the



second and third circuit into pairs for simultaneous movement,

(f) the first and second tie means each comprising a rigid tie member to enable operation of corresponding pairs of tied handles, and

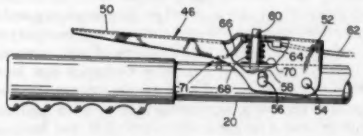
(g) a locking plate pivotally mounted for movement between the paths of movement of the pairs of tied circuit breaker handles, whereby movement of either of the pairs of tied handles to the "on" position pivots the locking plate into the path of movement of the other pair to prevent movement to the "on" position.

4,270,032

COMBINED SAFETY LEVER AND IGNITION INTERLOCK SWITCH

Dale R. Dobberpuhl, Horicon, Wis., assignor to Deere & Company, Moline, Ill.

Filed Apr. 2, 1979, Ser. No. 25,817
Int. Cl.³ H01H *9/06*
U.S. Cl. 200—61.85 **7 Claims**



1. An operator presence-sensing safety lever and switch assembly, comprising: an electrically conductive support; a lever having a handle section joined to a channel-like end section; said end section receiving said support and being pivotally connected thereto; an electrically non-conductive guide stem located in the end section and respectively fixed to one and slidably received in another of the lever and support; an electrical lead having an end received on the guide stem; an electrical conductive switch element received on the guide stem; a coil compression spring received on the guide stem and acting to bias the switch element and lead into engagement with each other and to bias the handle section of the lever to an inactive position away from the support wherein the switch

element is spaced from the support; electrical insulation located between the spring and support and the lever handle section and switch element being configured for movement to an active position against the support to thereby establish an electrical connection between the support and the lead.

4,270,033

BRAKE-FLUID LEVEL DETECTOR

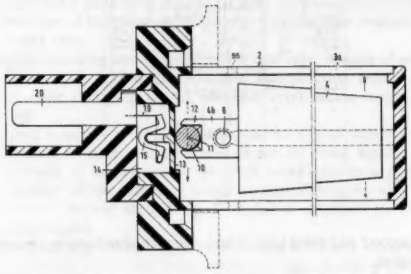
Alfred Hoffmann, Bad Harzburg, Fed. Rep. of Germany, assignor to Helphos-Autolight Schardmüller & Co., Bad Harzburg, Fed. Rep. of Germany

Filed May 30, 1979, Ser. No. 43,850

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1978, 2824035

Int. Cl.³ H01H *35/18*

U.S. Cl. 200—84 C **12 Claims**



1. A fluid-level detector comprising:
a container adapted to hold a supply of a fluid and having a side wall having an outer surface forming a pair of vertical spaced abutments;
a float inside said container adapted to float on said fluid;
a permanent bar magnet inside said container, having a longitudinal and horizontal magnet axis generally parallel to said wall, and magnetized transverse to said magnet axis;
link means inside said container connecting said magnet to said float for vertical displacement of said magnet through a predetermined magnet position lying horizontally between said abutments on vertical displacement of said float through a predetermined float position corresponding to a fluid level at which a signal is to be given;
a pair of contacts outside said container;
a switch element outside said container and adjacent said magnet, said element being displaceable by the field of said magnet between a closed position engaging and forming a closed circuit with said contacts and an open position out of engagement with at least one of said contacts, said switch element being generally U-shaped and having a pair of vertically spaced legs, a bight interconnecting said legs and generally horizontally level with said magnet position, and a magnetically attractable and horizontally elongated foot on each of said legs extending generally parallel to said wall and each level with a respective one of said abutments; and
means on said container including a pivot on said outer surface and engaging said bight for defining a pair of stable positions for said switch element respectively corresponding to said open and closed positions and for establishing an unstable metastable position between said stable positions and corresponding to said predetermined magnet position, one of said feet being attracted by said magnet and lying flatly against the respective abutment in said open position and the other of said feet being attracted by said magnet and lying flatly against the respective abutment in said closed position, whereby as said magnet passes through said predetermined magnet position said switch element moves between said open and closed positions.

4,270,034

PUFFER TYPE CIRCUIT INTERRUPTER

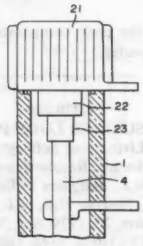
Masami Kii, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Amagasaki, Japan

Filed Mar. 24, 1978, Ser. No. 889,982

Claims priority, application Japan, Mar. 24, 1977, 52/32901; Mar. 24, 1977, 52/32902; Mar. 24, 1977, 52/32909; Mar. 24, 1977, 52/32915; Mar. 24, 1977, 52/32926; Mar. 24, 1977, 52/32929; Mar. 24, 1977, 52/32931; Mar. 24, 1977, 52/32932; Mar. 24, 1977, 52/32934; Mar. 24, 1977, 52/32935; Mar. 24, 1977, 52/36165[U]; Mar. 24, 1977, 52/36166[U]; Jun. 14, 1977, 52/70687; Jul. 21, 1977, 52/88074

Int. Cl.³ H01H *33/82*

U.S. Cl. 200—148 R **29 Claims**



4. A puffer type circuit interrupter comprising:
a chamber containing an arc extinguishing fluid;
a fixed contact in said chamber;
a movable contact in said chamber, said movable contact adapted to contact said fixed contact and to be movable away from said fixed contact in a first direction whereby an arc is formed;
means for moving said movable contact;
an arc space formed between said contacts when said movable contact is not contacting said fixed contact;
a constant volume pressure chamber connected to said arc space, said pressure chamber including at least one fin thereon;
a fluid discharge passage in said movable contact, said fluid discharge passage being closed until said movable contact has moved a predetermined distance in said first direction; and
a flow guide made from insulating material surrounding at least a portion of said movable contact, said flow guide being of such a length that it provides said closed condition for said fluid discharge passage.

4,270,035

SNAP ON MOUNTING CLIP FOR CIRCUIT BREAKERS

Konrad J. Richter, Sr., Lawrenceville, N.J., assignor to Heinemann Electric Company, Trenton, N.J.

Filed Jul. 16, 1979, Ser. No. 57,709

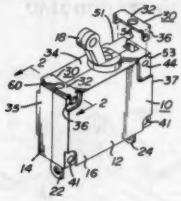
Int. Cl.³ H01H *13/06*

U.S. Cl. 200—294 **14 Claims**

2. In a circuit breaker the combination comprising
a molded case comprising two half-cases abutting each other,
a spring fastener embracing said half-cases,
said half-cases having recesses,
said fastener comprising a central portion and flexible arms on either side thereof embracing said half-cases and biasing said half-cases toward each other,
each arm having a tab deformed toward the embraced half-case,
each tab extending into one of said recesses,

each recess being defined by a wall which surrounds said tab so as to limit movement of said tab in three directions,

said arms including end portions flared outwardly of said case,



said arms being bowed to permit said arms to spring freely as they are pushed over said half-cases,

said case including a top wall, and

said central portion is bowed downwardly so as to be concave relative to said top wall of said case.

4,270,036

DEVICE FOR WELDING TOGETHER TWO BARS ON THEIR FRONT SIDES

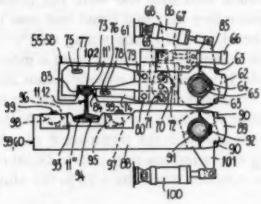
Hans-Rudolf Zollinger, Geroldswil, Switzerland, assignor to H. A. Schlatter AG, Zurich, Switzerland

Filed Oct. 24, 1979, Ser. No. 87,665

Claims priority, application Switzerland, Nov. 10, 1978, 11567/78

Int. Cl.³ B23K *11/32, 37/04*

U.S. Cl. 219—53 **11 Claims**



1. Welding apparatus for welding together, in end-to-end relationship to form a continuous rail, rail sections having a base, a web and a head having a running surface and side flanks, said welding apparatus comprising, in combination: a pair of vertical clamping assemblies for vertically aligning the respective ones of a pair of rail sections to be welded together with the running surfaces thereof at the same fixed height, said vertical clamping assemblies engaging the running surface of the rail head of said rail sections to vertically align said rail sections; and a lateral aligning device comprising at least a first pair of clamping arms disposed substantially perpendicular to the longitudinal length of said rail sections and between said vertical clamping assemblies, one of said clamping arms being associated with one of said rail sections, respectively, said first pair of clamping arms at one end thereof being pivotally rotatable about a common axis which is parallel to the longitudinal length of said rail sections into engagement with the respective ones of said rail sections, each of said clamping arms having stop means which engage said running surface of said rail heads of said rail sections to position said clamping arms with respect to said rail sections, said clamping means comprising a pair of clamping jaws which when laterally operated with respect to one another engage the respective ones of the side flanks of said rail heads of said rail sections to clamp said rail heads between them to laterally align the ends of said rail sections to be welded together.

4,270,037

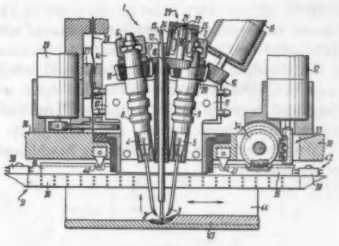
ARC WELDING MACHINE USING NON-CONSUMABLE ELECTRODE

Vladimir V. Grinin, ulitsa Raitsentr, 43, kv. 34, Krasnogorsk Moskovskoi oblasti, and Mikhail M. Shtrikman, ulitsa Molodezhnaya, 4, kv. 186, Moscow, both of U.S.S.R.

Filed Nov. 9, 1979, Ser. No. 92,687

Int. Cl.³ B23K *9/12*

U.S. Cl. 219—125.12 **1 Claim**



1. An arc welding machine using non-consumable electrode, comprising:

a welding head;

a body of said welding head, having an interior surface;

a passage formed in said interior surface, with a filler wire extending therethrough;

two current nozzles of said welding head, each being articulated within said body and arranged at an angle to said passage so as to be able to rotate about its axis:

two non-consumable electrodes of said welding head, each having a bent-away tip and being fixed in one of said nozzles so as to be able to move along its axis, thereby ensuring a requisite spacing between the said bent-away tips;

a welding head vertical travel mechanism geared to said welding head;

a screw pair of said welding head vertical travel mechanism, having a nut and a screw and being fixed in position by said nut on the body of said welding head;

an actuator of said welding head vertical travel mechanism, operably connected with the screw of said screw pair;

a movable platform mounting said actuator of said welding head vertical travel mechanism;

a welding head longitudinal travel mechanism geared to the welding head;

an actuator of said welding head longitudinal travel mechanism, said actuator being operably connected with said movable platform;

an electrode oscillating mechanism geared to said welding head;

an actuator of said electrode oscillating mechanism, said actuator being rigidly connected with the body of said welding head;

a gear drive of said electrode oscillating mechanism, said oscillating actuator being geared to said actuator and to said non-consumable electrodes of the welding head;

a sensor means for sensing angular position of the non-consumable electrodes, said sensor means having an input, a first output, a second output and a third output, and being operably connected through said input thereof with said nonconsumable electrodes;

a make-and-break switch having a first input, a second input, a third input and an output, and having its first and second inputs connected with said non-consumable electrodes at the moment when the welding process is started;

a device for controlling the arc length at a welding edge,

said device having a first input, a second input, a third input, a first output and a second output, and being connected through its first input with said output of said make-and-break switch, through its second and third inputs respectively with said first and second outputs of said electrode position sensor means, and through its first and second outputs with the actuator of said electrode oscillating mechanism;

an arc length stabilizer having a first input, a second input and an output, said stabilizer being connected through its first input with the output of said make-and-break switch, through its second output with the third output of said electrode position sensor means, and through its output with the actuator of said welding head vertical travel mechanism;

a mechanism for reversing longitudinal motion of said welding head, said mechanism having a first input, a second input, a first output and a second output, and being operably connected through its first and second inputs with said welding head, through its first output with the third input of said make-and-break switch, and through its second output with the actuator of said welding head longitudinal travel mechanism.

4,270,038

CIGARETTE LIGHTER WITH A BUILT-IN BATTERY CHECKER

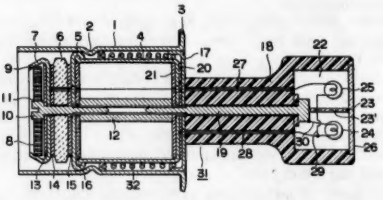
Yoshinori Warihashi, 43-4, Daita 1-chome, Setagaya-ku, Tokyo, Japan

Filed Jan. 31, 1979, Ser. No. 8,042

Claims priority, application Japan, Feb. 6, 1978, 53/12670[U]; Mar. 14, 1978, 53/31581[U]

Int. Cl.³ F23Q *7/22*

U.S. Cl. 219—269 **13 Claims**



1. A cigarette lighter with a built-in battery checker for use in automobiles which comprise two parts, one being a heater part in which a movable body provided with a heater at one end and a push nob at the other is mounted slidably in reciprocal front and rear directions to a holder and the other being a basal part into which the heater part is detachably inserted in such manner that when the nob is pushed to bring the heater into contact with an electrode plate connected to a battery, the heater can be heated by electric current from the battery so as to enable the heater part to be pulled out from the basal part, comprising:

the push nob being provided inside with a variable illumination means in which brightness of the illumination is diminished according to increase in the degree of consumption of the battery; and

the push nob being further provided inside with a standard illumination means for comparison in brightness with the variable illumination means.

4,270,039

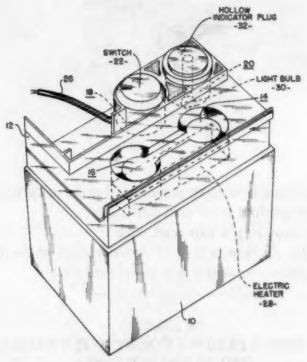
HEATING UNIT WITH INDICATOR FOR DISINFECTING SOFT LENSES, OR THE LIKE

Stephen G. Hauser, Tarzana, Calif., assignor to Rincon Industries, Inc., Los Angeles, Calif.

Filed Aug. 17, 1979, Ser. No. 67,478

Int. Cl.³ F27D *11/02*

U.S. Cl. 219—439 **4 Claims**



1. In an electrically energized heating unit which comprises a bowl having an open top, an incubator supported in and covering the open top of the bowl and including at least one well extending into the bowl, electrical heating means mounted in the bowl, and wax contained in the bowl to be heated from a solid state to a molten state by the electrical heating means when the electrical heating means is energized so as to introduce heat into the well; the combination of a hollow plug extending into said bowl and into the wax contained in said bowl, said plug containing wax which is molten and transparent when the wax in the bowl is molten and transparent, and which is solid and opaque when the wax in the bowl is solid; a transparent member mounted at the top of the plug, and an indicator member mounted at the bottom of the plug to be visible through the transparent member when the wax in the plug is in a molten state and to be invisible through the transparent member when the wax in the plug is in a solid state.

4,270,040

HEATER WITH REINFORCING STRATE

James P. McMullan, and Albert Stevens, both of 2630 Seaman Ave., El Monte, Calif. 91733

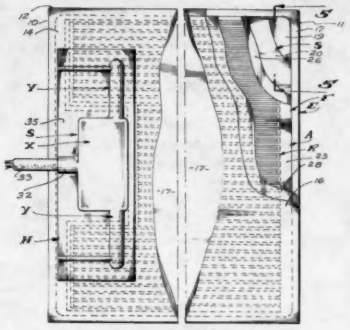
Filed Oct. 19, 1979, Ser. No. 86,400

Int. Cl.³ H05B *3/34*

U.S. Cl. 219—528 **8 Claims**

1. An elongate, flat rectangular laminated heater structure comprising a flat rectangular reinforcing strate of thin, flexible substantially dimensionally stable metal having flat top and bottom surfaces, opposite side edges and opposite end edges, a thin flat carrier film of dielectric plastic having flat top and bottom surfaces arranged atop and bonded to the top surface of the strate by a flexible cement, an elongate resistance heating element of thin flat metal foil ribbon arranged in a serpentine pattern throughout and occupying the major portion of the top surface of the film and bonded thereto by a flexible cement, said element has end portions extending to a portion of the top surface of the film unoccupied by the remainder of the element and integrally joined with metal foil terminals accessible at the top of the film, a flat rectangular envelope of flexible dielectric plastic sheet stock about the strate, film and the element with

a lower layer adjacent the bottom surface of the strate and a top layer adjacent the top surface of the film and the element;



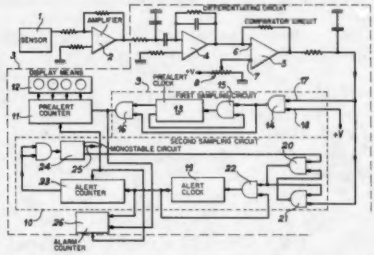
said top layer has access openings at said terminals providing access to said terminals.

4,270,041

PROCESS AND APPARATUS FOR DETECTING THE PRESENCE OF A PHYSICAL PHENOMENON

Gaëtan Pleyber, Domene, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Sep. 22, 1978, Ser. No. 945,014
Claims priority, application France, Oct. 3, 1977, 77 29652
Int. Cl.[3] G07C *1/10*; G06M *3/14*
U.S. Cl. 235—92 MT **6 Claims**



1. An apparatus for the detection of the presence of a physical phenomenon comprising:

a sensor sensitive to a characteristic magnitude of the phenomenon to be detected and able to supply a signal representative of said phenomenon;

at least one amplifier connected to the sensor output;

means for indicating passing beyond a predetermined threshold significant for the phenomenon to be detected, said means being connected to the amplifier output; wherein the means for indicating exceeding the significant threshold comprises:

a differentiating circuit connected to the amplifier output and supplying a signal which is the derivative relative to time of the signal representing the phenomenon;

a comparator whose one input is connected to the output of the differentiating circuit and whose other input is raised to a prealert reference potential, said comparator being able to supply a signal for initiating the prealert as soon as the amplitude of the differentiating circuit signal exceeds the amplitude of the reference potential;

a first time sampling circuit for fixing the elementary prealert periods of duration τ as soon as the comparator supplies a first signal for initiating the prealert;

a second time sampling circuit connected to said first sampling circuit for fixing alert periods of duration $T>\tau$ and a prealert counter having an input connected to an output of the first time sampling circuit and able to count during the alert periods of duration T the number N_p of prealert sampling periods during which the reference potential is exceeded;

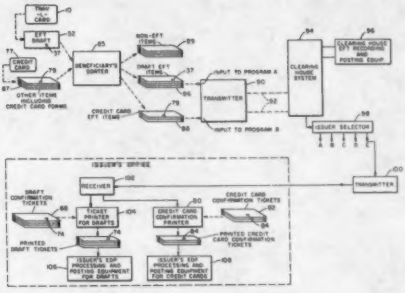
alert display means connected to the prealert counter output for indicating the presence of an alert during time T as soon as the number N_p of prealerts exceeds a predetermined number N_{al}, the numbers N_p and N_{al} being whole numbers and the number N_{al} being selected in such a way that $1<N_{al}<T/\tau$.

4,270,042

ELECTRONIC FUNDS TRANSFER SYSTEM

John M. Case, 35 Lehigh Rd., Wellesley, Mass. 02181

Continuation-in-part of Ser. No. 820,633, Aug. 1, 1977, abandoned. This application Jul. 13, 1978, Ser. No. 924,200
Int. Cl.[3] G06F *15/30*; G06K *19/06*
U.S. Cl. 235—379 **3 Claims**



1. An electronic funds transfer (EFT) system adapted to carry out a credit transaction under

a credit instrument provided with data defining the issuer and holder of said instrument and constituting authorization for the holder to conduct credit transactions under said instrument said system comprising:

(a) a charge ticket to be completed by the beneficiary of the transaction at the time of said transaction, said ticket bearing machine readable data identifying the instrument holder, his account at the issuer, the amount of the transaction, the issuer and a machine readable element located at a predetermined optional standards position on said ticket, said last named machine readable element defining the ticket to be cleared on an EFT basis;

(b) sorting means at the beneficiary's location for segregating said ticket as an EFT item in response to the detection of said last named machine readable element;

(c) a message transmitter;

(d) means for transferring said segregated ticket to said message transmitter;

(e) said message transmitter being adapted to read the machine readable data from the segregated ticket and transmit to a clearing house receiver, as a separate message for each said ticket, all of said data together with an identification of the beneficiary and a designation of the transmission as an EFT item;

(f) said clearing house receiver being adapted to segregate each such separate message in accordance with the identification of the issuer and for delivering said separate message to a transmitter connected to a receiver at said issuer;

(g) a printer at said issuer, said printer containing a blank confirmation ticket having a machine readable element in the same predetermined standards optional position as the

corresponding machine readable element on said charge ticket;

(h) said printer being connected to the output of said last named receiver and being adapted to print on said confirmation ticket all of the data delivered to it by said receiver; and

(i) means for delivering each printed confirmation ticket to electronic data processing equipment which is adapted to detect the presence and position of said last named machine readable elements and, in response to said detection to clear said confirmation ticket respectively through and to the proper credit accounts on the books of the issuer.

4,270,043

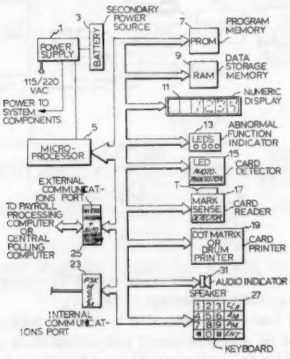
METHODS OF AND APPARATUS FOR TIME CLOCK RECORDING AND COMPUTATION AND RELATED USES

Larry K. Baxter, Lexington, Mass.; Robert D. Cohen, Belle Harbor, N.Y.; Mark S. Ain, Newton, and Sheldon P. Apsell, Nahant, both of Mass., assignors to Kronos Inc., Brighton, Mass.

Filed Mar. 13, 1979, Ser. No. 20,223

Int. Cl.[3] **G06C** *15/00;* **G06F** *3/08;* **G06K** *7/10;* **G06F** *15/12*

U.S. Cl. 235—419 **56 Claims**



1. A method of time-clock recording for use with a time and other data card provided with information identifying the user and space for recording additional data, that comprises, electronically storing identification, time and other data of users; electronically reading the identifying information on a user's card at times of check-in and check-out; withdrawing from such electronic storage, in response to such reading, data associated with the user; electronically totaling time periods between times of check-in and check-out to maintain stored data as to summary time periods for the user; and recording such summary time period data upon the said space of the card at check-out.

4,270,044

OPTICAL REFERENCE GYRO

John M. Elwell, Jr., Sudbury, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Apr. 25, 1979, Ser. No. 33,214

Int. Cl.[3] **G01J** *1/20*

U.S. Cl. 250—201 **22 Claims**

1. An inertially-aided optical system on a support platform, comprising:

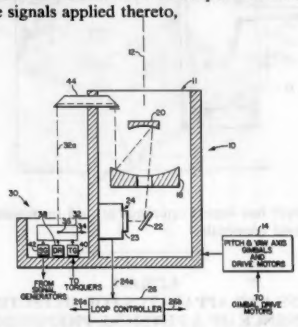
A. an optical sensor coupled to said platform and including a focal plane, an objective for gathering light from an optical field about an optical axis, and associated optical elements adapted to form an image of said optical field on said focal plane,

B. an optical reference gyro (ORG) rigidly coupled to said sensor and including:

wheel means adapted for continuous rotation about a spin axis and for rotational displacement about two orthogonal input axes, said input axes being fixed with respect to said sensor and said input axes and said spin axis having a common point of intersection,

means for driving said wheel means to continuously rotate about said spin axis,

torquer means coupled to said sensor for applying torques to said wheel means about said input axes in response to drive signals applied thereto,



optical source means coupled to said wheel means for generating a collimated optical beam directed along said spin axis from said wheel means,

C. beam coupling means for coupling said optical beam through said objective of said optical sensor to said focal plane,

D. optical detector means for detecting the point of incidence of said optical beam on said focal plane and for generating beam position signals, said beam position signals being representative of the position of said point of incidence in said focal plane, and

E. feedback means responsive to said beam position signals to control the position of said beam incidence point in said focal plane.

4,270,045

APPARATUS FOR READING AN OPTICAL RADIATION-REFLECTING INFORMATION CARRIER FOR CONTROLLING FOCUS

Willem G. Opheij, and Peter F. Greve, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 19, 1977, Ser. No. 834,243

Claims priority, application Netherlands, Jun. 20, 1977, 7706753

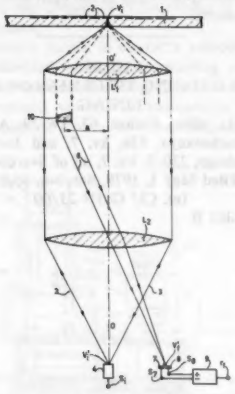
The portion of the term of this patent subsequent to Jan. 16, 1996, has been disclaimed.

Int. Cl.[3] **H04N** *5/76;* **G01J** *1/36*

U.S. Cl. 250—204 **6 Claims**

1. An apparatus for reading an optical radiation-reflecting information carrier having an information structure, which apparatus comprises a radiation source which supplies a read beam, an objective system for focussing the read beam to a read spot on the information structure of the information carrier and for imaging the read spot on said radiation source, said radiation source also functioning as a radiation-sensitive information detector whose output signal represents the information, an opto-electronic focussing error detection system for determining a deviation between the desired and the actual position of the plane of focussing of the objective system, which focussing error detection system comprises two radiation-sensitive detectors and a single radiation-deflecting ele-

ment disposed on one side of the optical axis of the objective system, the surface area of said element being substantially smaller than the cross-sectional area of the read beam, said element being disposed in the path of the read beam which has been reflected by the information carrier and which originates



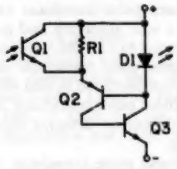
from the read spot and being configured to deflect a portion of said reflected read beam onto said detectors and to shift the position of the deflected radiation with respect to said detectors in response to changes in the distance between said objective and said information carrier.

4,270,046

TWO-TERMINAL OPTICAL SENSOR

Paul M. Werking, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 2, 1978, Ser. No. 947,675
Int. Cl.³ G01J *1/32*
U.S. Cl. 250—205 **10 Claims**



1. A two-terminal optical sensor comprising an electroluminescent component optically coupled with a light sensing component, a resistance means, and means for electrically biasing said electroluminescent component, said light sensing component and said resistance means in parallel relationship, said electroluminescent component having amplifier means electrically coupled in series therewith, driven by the output from said light sensing component.

4,270,047

INFORMATION DETECTING APPARATUS

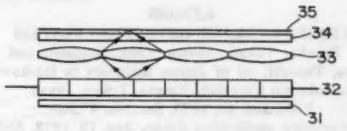
Noritaka Mochizuki, and Yoshioki Hajimoto, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 27, 1979, Ser. No. 34,206
Claims priority, application Japan, Apr. 28, 1978, 53-51837
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—216 **4 Claims**

1. Information detecting apparatus comprising:

a photoelectric sensor including a plurality of sensor elements;

an image forming optical system for forming an image of an original surface on the surface of said photoelectric sensor;



a light source unit for illuminating the original surface through said photoelectric sensor and said image forming optical system;

means for reading the signals provided on each photoelectric conversion surface in a fashion of time series; and

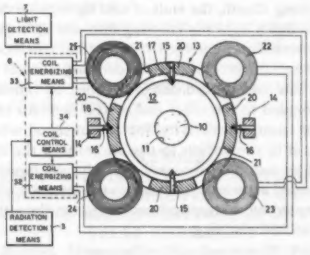
driving means for producing a relative movement between said photoelectric sensor and said original.

4,270,048

APPARATUS FOR DETERMINING THE ANGLE OF INCIDENT ELECTROMAGNETIC RADIATION

Lotar Liebing, Neuhausen, Fed. Rep. of Germany, assignor to Deutsche Forschungs-und-Versuchsanstalt für Luft-und Raumfahrt e.V., Bonn, Fed. Rep. of Germany

Filed Oct. 3, 1979, Ser. No. 81,440
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1979, 2910588
Int. Cl.³ H01J *3/14*
U.S. Cl. 250—216 **15 Claims**



1. In an apparatus for receiving electromagnetic radiation energy at various angles of incidence and for directing the radiation energy upon a stationary radiation detection device (**3**), including a movable optical element (**2**) for directing the radiation upon the detection element, a magnet (**12**) rigidly connected with the optical element, and means (**22–25**) for producing an adjustable external magnetic field for reacting with the field of the magnet to displace the optical element to cause the radiation to be always directed, independently of the angle of incidence of the radiation, upon the detection element:

the improvement which comprises

(a) a cage (**13**);

(b) first pivot means (**15**) connecting said magnet with said cage for pivotal movement about a first pivot axis;

(c) second pivot means (**16**) connecting said cage for pivotal movement about a second pivot axis;

(d) said magnet being permanently magnetized in a radial direction parallel to a first plane containing said first pivot axis; and

(e) coil means (**22, 24; 23, 25**) for generating an electromagnetic field for reaction with the field of the permanent magnet to pivot said magnet about at least one of said first and second pivot axes, said coil means including a plurality of coils arranged in a second plane con-

taining said second pivot axis, the axes of said coils being normal to said second plane, whereby upon selective energization of the coils, the magnet can be pivoted about a desired pivot axis.

4,270,049

LIQUID LEAKAGE DETECTION SYSTEM

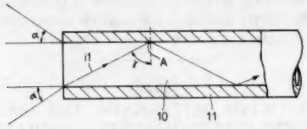
Masaya Tanaka, Tokyo; Mitsuo Ono, Koganei, and Sadao Degawa, Tanashi, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 11, 1979, Ser. No. 47,208

Claims priority, application Japan, Jun. 12, 1978, 53-70660; Jun. 12, 1978, 53-70661; Jun. 12, 1978, 53-70662; Jun. 12, 1978, 53-80296[U]; Jul. 12, 1978, 53-95914[U]

Int. Cl.³ G02B *5/16*

U.S. Cl. 250—227 **9 Claims**



1. A liquid leakage detection system comprising a plurality of light guides each being provided with a relatively straight light guide core that has a predetermined index of refraction and a cladding which is an outer layer wholly surrounding said light guide core, said cladding having an index of refraction lower than that of said light guide core and is adapated to be swelled by a liquid whose leakage is to be detected, said light guides being stranded into a detector cable and being provided with a covering sheath, the ends of said light guide core being uncoated so that a light ray entering into said light guide core at one end thereof may emerge from the other end thereof with a minimum transmission loss, a light-emitting element optically coupled to one end of said detector cable, an optical sensor optically coupled to the other end of said detector cable, and an electrical circuit for deriving the output signal whose level or intensity is in proportion to the intensity of the light rays intercepted by said optical sensor whereby the liquid leakage may be detected in terms of the drop in the intensity of the light rays intercepted by said optical sensor due to the adhesion of said liquid to said cladding.

4,270,050

APPARATUS FOR MEASURING PRESSURE BY ABSORPTION SPECTRUM CHANGE

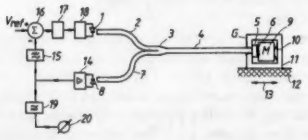
Torgny Brogardh, Vesteras, Sweden, assignor to ASEA Aktiebolag, Vesteras, Sweden

Filed Sep. 7, 1979, Ser. No. 73,191

Claims priority, application Sweden, Sep. 15, 1978, 7809710

Int. Cl.³ G01D *5/34*

U.S. Cl. 250—231 R **15 Claims**



1. Optical measuring device for measuring physical parameters, comprising:

a transducer for transforming a physical parameter to be measured into mechanical stresses in at least one modulator included in the transducer, said modulator comprising a material having optical properties dependent on said mechanical stresses;

means for radiating said transducer with light; and

means for measuring the optical properties of said modulator by means of light affected by said modulator, said optical properties being varied by the pressure dependency of at least one absorption edge in the light-absorption spectrum of said material.

4,270,051

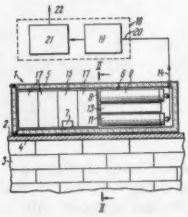
DEVICE FOR GAUGING THICKNESS OF REFRACTORY LINING

Jury M. Galkin, ulitsa Frunze, 67, kv. 29; Albert B. Saulin, ulitsa Studencheskaya, 52a, kv. 7, and Jury N. Olshvang, ulitsa Belinskogo, 220/3, kv. 7, all of Sverdlovsk, U.S.S.R.

Filed May 1, 1979, Ser. No. 35,052

Int. Cl.³ G01N *23/00*

U.S. Cl. 250—358 R **13 Claims**



1. A device for gauging the thickness of a refractory lining of a heating plant, said refractory lining including a portion which is subjected to thickness measurement, said device comprising:

an electric pulse measuring unit having an input;

and

a lining thickness pulse transducer mounted on said portion of said refractory lining which is subjected to thickness measurements, said lining thickness pulse transducer having an output and being connected via said output to said input of said electric pulse measuring unit;

said lining thickness pulse transducer having a sealed housing including a wall adjoining said portion of said lining which is subjected to said thickness measurements;

said lining thickness pulse transducer including a fast neutron source accommodated in said sealed housing;

said lining thickness pulse transducer including a thermal and epithermal neutron detector accommodated in said sealed housing;

said lining thickness pulse transducer further including a protective shield accommodated in said sealed housing and interposed between said fast neutron source and said thermal and epithermal neutron detector;

said thermal and epithermal neutron detector further including thermal neutron counters in a number determined by the activity of said fast neutron source;

said thermal and epithermal neutron detector further comprising a neutron moderator intended to expand the energy intervals of neutrons counted by said thermal neutron counters.

4,270,052

RADIOACTIVE GAS DOSE COMPUTER

Russell W. King, 1220 Via Granate, Sierra Madre, Calif. 91024

Continuation of Ser. No. 853,476, Nov. 21, 1977, abandoned. This application Jun. 18, 1979, Ser. No. 49,644

Int. Cl.³ G01N *23/10*; G21F *5/00*

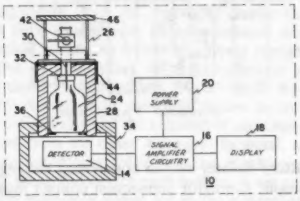
U.S. Cl. 250—432 PD **12 Claims**

1. An apparatus for directly determining the volume of a radioactive gas to be withdrawn from a radiation-shielded

closed container such that withdrawn volume will constitute a predetermined dose of radioactivity, the determination and withdrawal of the desired amount of radioactive gas being accomplished without removing the closed container from its radiation shield, said apparatus comprising, in combination:

(a) radiation-shielded means for containing radioactive gas, the radioactive gas producing gamma radiation corresponding to the dosage of radioactivity in said radiation-shielded means;

(b) shielded-valve means in operable association with said radiation-shielded means for containing radioactive gas, the shielded-valve means being adapted for withdrawal of a predetermined volume of radioactive gas from said radiation-shielded means for containing radioactive gas;



(c) radiation-detection means in operable association with said radiation-shielded means for converting said gamma radiation into an electronic signal indicative of the amount of radioactivity in said radiation-shielded means;

(d) display means for displaying the amount of the radioactive gas in the radiation-shielded closed container at any given time;

(e) display means for displaying the volume of radioactive gas required to be withdrawn from the radiation-shielded closed container to provide a predetermined dose; and

(f) means for amplification of the electrical signal from said radiation-detection means.

4,270,053

ELECTRONIC OR IONIC OPTICAL APPARATUS

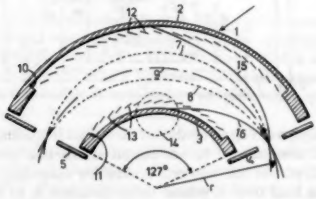
Hermann Froitzheim, Aachen, Fed. Rep. of Germany, assignor to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Oct. 31, 1979, Ser. No. 89,840

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1978, 2848538

Int. Cl.³ H01J *35/16*

U.S. Cl. 250—508 **8 Claims**



1. Electronic or ionic optical apparatus comprising means forming a particle path with baffle means including baffles inclined about 5° to 25° with respect thereto and disposed such that there is a high probability of passage therethrough of particles deviating from the desired particle path.

4,270,054

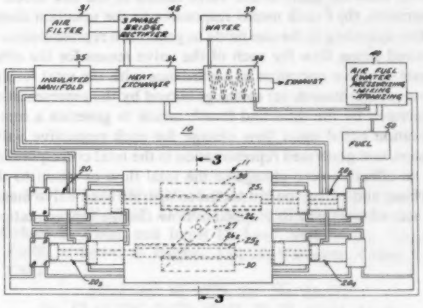
POWER PLANT

Norton W. Dowd, 4283 Turner Rd., Prince George, B.C., Canada (V2K 2J5)

Filed Apr. 25, 1980, Ser. No. 143,878

Int. Cl.³ H02K *33/00*

U.S. Cl. 290—4 R **5 Claims**



1. An electrical generator assembly, comprising:

a first pair of opposed piston assemblies connected for common reciprocal articulation;

a second pair of opposed piston assemblies connected for common reciprocal articulation;

gearing means connected between said first and second pairs of opposed piston assemblies for providing opposing interconnection therebetween;

a first and second set of interdigitated pole pieces respectively connected to said first and second pairs of opposed cylinder assemblies;

a stator disposed proximate said first and second sets of pole pieces for electromagnetic induction; and

a winding connected for electric excitation to said stator and aligned to produce magnetic forces in said first and second sets of pole pieces.

4,270,055

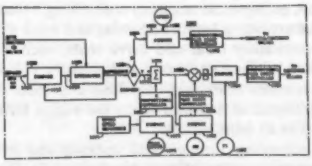
SYSTEM AND METHOD FOR TRANSFERRING THE OPERATION OF A TURBINE-POWER PLANT BETWEEN SINGLE AND SEQUENTIAL MODES OF TURBINE VALVE OPERATION

Uri G. Ronnen, Monroeville, Pa.; Leaman B. Podolsky, Wilmington, Del., and Theodore C. Giras, Pittsburgh, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 306,789, Nov. 15, 1972, abandoned. This application Dec. 30, 1977, Ser. No. 866,155

Int. Cl.² H02P *9/04*

U.S. Cl. 290—40 R **20 Claims**



1. A control system for a turbine power plant wherein a plurality of valve means, each of which includes at least one valve, controls the admission of steam to respective circumferentially spaced nozzle arcs inside the turbine casing, including means to govern the operation of such plurality of valve means either in a single valve mode to admit steam flow equally through each valve to a full arc of nozzles or in a sequential

mode to admit steam through a partial arc of the nozzle, the extent of which arc depends on the amount of total load requirement of the turbine; comprising first means to select the other mode of valve operation when operating in the one mode of valve operation; second means to generate a representation based upon total steam flow demand to the turbine; calculating means including (a) third means to generate a representation of steam flow for each of the valve means in the one mode of operation, (b) fourth means responsive to the selection means when operating in the one mode to generate a representation of desired steam flow for each of the valve means for the other mode of valve operation in accordance with the total turbine flow representation, (c) means governed by the representation generated by the third and fourth means to generate a representation based upon flow change for each respective valve means, said generated representation in the total corresponding to an effective zero change in the total flow of steam to the turbine; and valve control means to operate each valve means in accordance with its respective flow change representation.

4,270,056

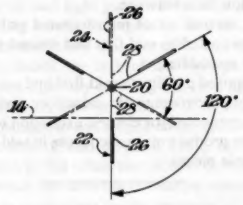
UNDERSHOT CURRENT MOTOR

Oliver D. Wright, 609 Rosedale Ave., Bellefonte, Del. 19809

Filed Feb. 15, 1980, Ser. No. 121,803

Int. Cl.³ F03B 7/00

U.S. Cl. 290—54 **8 Claims**



1. An undershot current motor comprising:

a float or barge adapted to be moored on the surface of moving water and having an opening vertically through the center thereof,

support means on said float for supporting a horizontal, rotatable drive shaft above said water over said opening, the drive shaft extending transversely to the direction of water flow,

a horizontal drive shaft rotatably supported above said water by said support means,

at least two sets of 3-bladed paddle assemblies affixed to said drive shaft, each paddle assembly comprising 3 blades and each blade extending lengthwise along said drive shaft and radially outwardly from said drive shaft, each blade in each assembly being positioned substantially 120 degrees from each other blade, and said blades in each said set being positioned so that they bisect the angles formed by the blades in an adjacent set,

the blades extending through said opening and into said water during a portion of each revolution of said paddle assemblies and drive shaft,

said drive shaft being connected to, in appropriate sequence, an optional gear box, an optional electrical generator, and thence to a power takeoff device such that, when moored on moving water, the water causes the paddle assemblies and drive shaft to rotate, thereby generating power at said power takeoff.

4,270,057

BATTERY ISOLATOR SWITCHES FOR USE IN ROAD VEHICLES

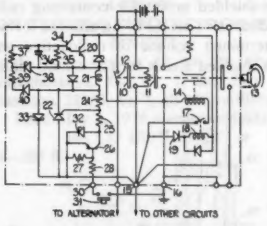
William D. Holt, Colne, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Nov. 20, 1979, Ser. No. 95,945

Claims priority, application United Kingdom, Nov. 25, 1978, 46080/78

Int. Cl.³ H02J 1/00

U.S. Cl. 307—10 BP **6 Claims**



1. A battery isolator switch comprising battery connection contact means, alternator connection contact means, latching mechanical means for closing said contact means, said mechanical means latching with the contact means in closed position, electrical release means operating on said mechanical means for opening said contact means, a relay winding operable independently of said mechanical means for opening said alternator connection contact means and an electrical control circuit for operating said electrical release means and said relay winding and including a latching circuit operable by momentary closure of a remote contact and providing current to said relay winding and a delay circuit for operating said electrical release means after a predetermined delay.

4,270,058

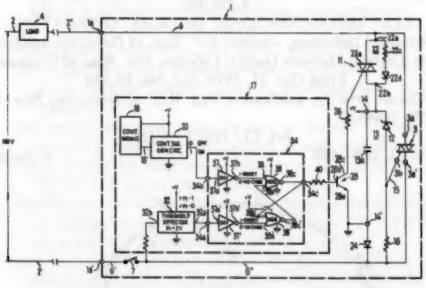
POWER SUPPLY AND CONTROL CIRCUIT FOR SERIES CONNECTED CONTROLLER

Louis W. Schornack, 7300 W. Keeney, Niles, Ill. 60648

Filed Jul. 25, 1979, Ser. No. 60,578

Int. Cl.³ H05B 37/02

U.S. Cl. 307—140 **23 Claims**



1. In a DC power supply and control circuit including a pair of AC input terminals to be connected across and energized from one AC power line and one conductor extending to one terminal of a load device whose other terminal is to be connected across another AC power line, a triggerable threshold power switch having a pair of load terminals coupled to said AC input terminals and a control terminal for receiving a trigger signal which triggers said power switch into a conductive state which continues until current flow therethrough drops below a given holding current level during the half cycle of the applied AC voltage involved, control means for selec-

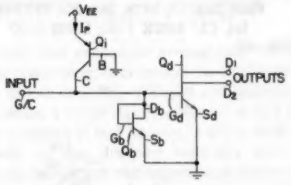
tively providing or terminating a control signal which is to initiate a conductive mode of operation of said power threshold switch, and a DC power supply for said control means for energizing the same, said DC power supply including a chargeable energy storing means having output terminals at which appears the DC voltage to which the storing means charges, said output terminals being coupled to said control means to energize the same, and a circuit for feeding charging current to said energy storing means from said pair of AC input terminals, said circuit including rectifier means for converting AC to DC and a relatively large impedance means connected in series with said rectifier means and energy storing means, and shunting means for shunting said large impedance means with a low impedance during short intervals at the beginning of the half cycle conducting periods of the power switch when the switch is still non-conductive, the improvement wherein said shunting means is an AC threshold device having load terminals in parallel with said large impedance means and a control terminal, switching means selectively operable by said control signal to conductive or non-conductive states, the control terminal of said shunting AC threshold device being coupled only through said switching means between one of said AC input terminals and the terminal of said energy storage means remote from the other AC input terminal, and power switch triggering means following the conduction of said shunting AC threshold device each half cycle for generating a power switch triggering signal fed to the control terminal of said power threshold switch to trigger the same into conduction each half cycle shortly after said shunting threshold device becomes conducting, said energy storage means being charged by current flowing through the shunting threshold device at least every other half cycle prior to the initiation of conduction of said power threshold switch.

4,270,059

STATIC INDUCTION TRANSISTOR LOGIC CIRCUIT

Jun-ichi Nishizawa, and Tadahiro Ohmi, both of Sendai, Japan, assignors to Zaidan Hojin Handotai Kenkyu Shinkokai, Sendai, Japan

Filed May 18, 1978, Ser. No. 907,318
Claims priority, application Japan, May 28, 1977, 52-62648
Int. Cl.[3] H03K *19/091, 19/20;* **H01L** *27/04, 29/80*
U.S. Cl. 307—446 **7 Claims**



1. A static induction transistor logic circuit comprising:

an injector transistor having a control electrode held at a reference potential, a first electrode, and a second electrode applied with a potential to thereby cause a current having a value determined by the potential applied to flow through the first electrode;

a driver static induction transistor having a gate connected to said first electrode of the injector transistor, a drain, and a source held at said reference potential; and

a bypath static induction transistor having a gate, a drain connected to both the gate of the bypath transistor and said gate of said driver transistor, and a source held at said reference potential,

said bypath transistor having in its conductive state a larger internal resistance than said driver transistor in its conductive state and being operative so that when said driver transistor is in its conductive state, the bypath transistor becomes conductive to allow a part of said current supplied from said first electrode to flow through the bypath transistor, with a certain potential developed at the drain of the bypath transistor,

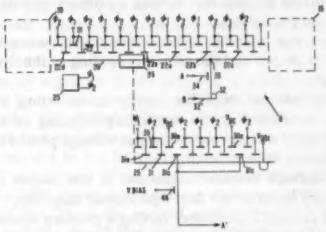
said certain potential, when applied at said gate of said driver transistor, allowing said driver transistor to turn to be conductive, and having a value associated with that of said current supplied from said first electrode.

4,270,060

MONOLITHIC FOCAL PLANE ARRAY HAVING ON-CHIP APERTURE CORRECTOR

Michael Y. Pines, and Israel D. Levy, both of Los Angeles, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 10, 1979, Ser. No. 83,423
Int. Cl.[3] G11C *19/28;* **H01L** *29/78, 27/14, 31/00*
U.S. Cl. 307—221 D **23 Claims**



1. In a charge coupled device (CCD) formed on a semiconductive layer transferring charge packets once every CCD clock period, an optically scanned focal plane array having a serial output register storing charge packets arranged in an order parallel to the direction of optical scan, a multiplexer and an on-chip aperture corrector, said aperture corrector comprising:

a main CCD charge flow channel in said semiconductive layer for serially transferring main charge packets from said serial register to said multiplexer, having a charge injection location intermediate said register and said multiplexer;

a secondary CCD charge flow channel in said semiconductive layer adjacent said main channel for transferring charge packets in synchronism with charge transfer in said main channel;

a charge splitter for continuously diverting a selected portion, 1-p, of the charge flowing in said main channel into said secondary channel to create secondary charge packets in said secondary channel split off from corresponding main charge packets in said main channel;

a charge injector for continuously creating a supplementary charge flow into said main channel at said intermediate charge injection location;

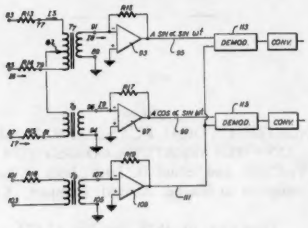
a charge sensor in said secondary channel for sensing each of said secondary charge packets at a first selected interval from the time of arrival of each of said corresponding main charge packets at said intermediate charge injection location; and,

means for reducing said supplementary charge flow at said intermediate injection location in response to said charge sensor according to the amount of charge of each of said secondary charge packets.

4,270,061
CURRENT TRANSFORMER INPUT SYSTEM FOR AC CONVERSION DEVICES

Alfred D. Gronner, White Plains, N.Y., and David J. Simon, Saddle Brook, N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Nov. 3, 1978, Ser. No. 957,525
Int. Cl.[3] G06G *7/12*; H03K *3/26*
U.S. Cl. 307—270 **5 Claims**



1. An input system for isolating sine and cosine resolver outputs from converter or demodulator inputs which comprises:

a first current transformer having a primary winding and a secondary winding;

a first resistor adapted to be connected between the sine resolver output and the primary winding of the first transformer;

a first operational amplifier having an inverting input directly connected to the secondary winding of the first transformer and having an output voltage proportional to the current at its inverting input;

a first feedback resistor connected to the output and the inverting input of the first operational amplifier;

a second current transformer having a primary winding and a secondary winding;

a second resistor adapted to be connected between the cosine resolver output and the primary winding of the second transformer;

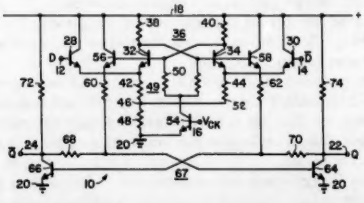
a second operational amplifier having an inverting input directly connected to the secondary winding of the first transformer and having an output voltage proportional to the current at its inverting input; and

a second feedback resistor connected to the output and the inverting input of the second operational amplifier.

4,270,062
"D" FLIP-FLOP

John E. Hanna, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 887,918, Mar. 17, 1978, abandoned, which is a continuation of Ser. No. 756,167, Jan. 3, 1977, abandoned. This application Feb. 27, 1979, Ser. No. 15,849
Int. Cl.[3] H03K *3/289*
U.S. Cl. 307—272 A **12 Claims**



1. A flip-flop circuit including in combination:

power supply conductor means;

master latch means having a first transistor and a second transistor, each of said transistors having emitter, collector and base electrodes;

first feedback means coupling said collector and said base electrodes of said first transistor respectively to said base and said collector electrodes of said second transistor;

second feedback means having a resistive network connected in a path between said emitter electrode of said first transistor and said emitter electrode of said second transistor, said resistive network providing positive feedback between said first and second transistors to increase noise immunity and stabilize signal levels in said flip-flop circuit;

means for inputting data having output terminals coupled to said first and second transistors, said means for inputting data including a third transistor having a base electrode adapted to receive data and an emitter electrode directly connected to said emitter electrode of said first transistor and a collector electrode directly and only connected to said power supply conductor means, and a fourth transistor having a base electrode adapted to receive data and an emitter electrode directly connected to said emitter electrode of said second transistor and a collector electrode directly and only connected to said power supply conductor means, said third and fourth transistors thereby operating as emitter followers which respectively drive said emitters of said first and second transistors so that said first and second transistors are operated in common base configurations for maximizing the speed power product of the flip-flop circuit;

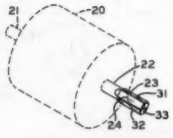
means for transferring data having input terminals and output terminals, said input terminals of said means for transferring data being coupled to said first and second transistors; and

slave latch means having input terminals coupled to said output terminals of said means for transferring data, said slave latch means having output terminals for providing the output signals of the flip-flop circuit.

4,270,063
MOTOR HAVING ADAPTED SHAFT AND SHAFT ADAPTER

Richard W. Dochterman, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Jun. 19, 1978, Ser. No. 917,078
Int. Cl.[3] H02K *7/00*; E05B *3/00*
U.S. Cl. 310—66 **3 Claims**



1. An adapted shaft motor comprising a stator assembly, a rotor assembly including a shaft of a predetermined diameter and having at least one round end extending from the stator assembly for connection to a driven device having a bore greater than said predetermined diameter, and an adapter positively interlocked with the shaft and positively located on the at least one end of the shaft; said adapter comprising a tube sector having a connecting segment bottomed against the end of the shaft, and first and second laterally extending segments that extend along the shaft in cantilever fashion from the connecting segment; said laterally extending segments each having a continuous smooth shaft embracing interior surface with a curvature corresponding substantially throughout to the curvature of the shaft; said laterally extending segments having adjacent continuous edges thereof spaced from one another to establish a fastener accommodating passageway that extends to

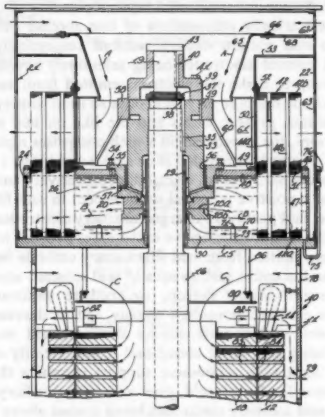
the free ends of the laterally extending segments whereby a burr raised on the shaft due to a fastener will not interfere with removal of the tube sector from the shaft; and said tube sector gripping the shaft with sufficient force to prevent inadvertent removal of the tube sector from the shaft and yet so that the tube sector may be readily manually removed from the shaft, said connecting segment limiting movement of the adapter on the shaft.

4,270,064

HEAT EXCHANGE ARRANGEMENT FOR COOLING LUBRICANT FOR VERTICAL ELECTRIC MOTOR THRUST BEARING

Frank J. Glandorf; Paul D. Wagner, both of Cincinnati, Ohio, and John J. Keuper, Cold Spring, Ky., assignors to Siemens-Allis, Inc., Atlanta, Ga.

Filed Jun. 5, 1978, Ser. No. 912,979
Int. Cl.³ H02K *5/16*
U.S. Cl. 310—90 **10 Claims**



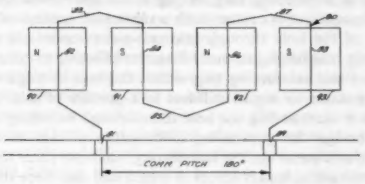
1. A lubricant heat exchanger arrangement for a vertical electric motor comprising, in combination, a cylindrical motor housing with its axis disposed vertically and including top and bottom end frames, a stator rigidly mounted in said housing, a rotor rotably mounted in said housing, a drive shaft affixed to said rotor with its axis disposed vertically and extending through said top and bottom end frames, wall means above said top end frame defining a cup-shaped lubricant-receiving reservoir, a thrust bearing disposed in said reservoir and having a stationary annular bearing surface mounted in fixed relation to said top end frame and a rotatable annular bearing surface mounted in fixed relation to said shaft and being in sliding rotatable engagement with said stationary bearing surface so that said thrust bearing rotatably supports said shaft and said rotor, liquid lubricant in said reservoir in lubricating and heat absorbing relation with said thrust bearing, a plurality of heat transferring heat pipes disposed in said reservoir with one end submerged in said lubricant and the other end exposed to air within said housing above said lubricant, and air inlet and air exhaust means for moving air into said housing above said lubricant and for circulating it past said other end of said heat tubes and exhausting it from said housing, said means for moving air including a plurality of fan blades within said housing and means operatively connected to said shaft for rotating said fan blades.

4,270,065

FOUR POLE WAVE WOUND DIRECT CURRENT MACHINE WITH MULTI-TURN ARMATURE COILS

Jeffrey T. Major, Cygnet, Ohio, assignor to Eltra Corporation, Toledo, Ohio

Filed Mar. 19, 1979, Ser. No. 21,454
Int. Cl.³ H02K *23/32*
U.S. Cl. 310—207 **5 Claims**



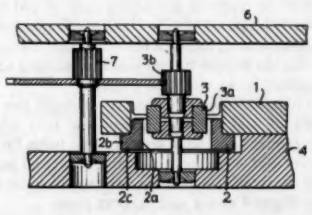
1. A wave wound armature for a 4-pole direct-current machine comprising a plurality of commutator segments spaced around said armature and electrically insulated from each other, a laminated core having an outer surface defining a plurality of parallel spaced slots each having first and second ends with said first ends adjacent said commutator segments, and a plurality of continuous electrical conductors each having two ends electrically connected to a different two of said commutator segments spaced substantially 180° apart about said armature, each of said conductors following a different path extending continuously from one of the two connected commutator segments to the first end of a first slot, along the first slot, from the second end of the first slot to a second end of a second slot spaced substantially 90° about said armature from said first slot, along the second slot, from the first end of the second slot to the first end of a third slot spaced substantially 90° about said armature from said second slot and substantially 180° about said armature from said first slot, along the third slot, from the second end of the third slot to the second end of a fourth slot spaced substantially 90° about said armature from said third slot and between said first and third slots, along the fourth slot, and from the first end of the fourth slot to the other of the two connected commutator segments whereby each conductor forms at least two open turns on said armature.

4,270,066

MINIATURE MOTOR FOR AN ELECTRONIC TIMEPIECE INCLUDING A STATOR HAVING A NON-MAGNETIC REINFORCING RING

Kiichi Terade, Tokyo, and Yasuhiro Iida, Funabashi, both of Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Continuation-in-part of Ser. No. 686,502, May 14, 1976, abandoned. This application Jan. 8, 1979, Ser. No. 1,789
Claims priority, application Japan, May 16, 1975, 50-59148
Int. Cl.³ H02K *1/12*
U.S. Cl. 310—258 **13 Claims**



1. The combination of a stator for a miniature electric motor for an electronic timepiece, and a reinforcing ring for reinforc-

ing the stator comprising: a platelike one-piece stator of magnetizable material having a pair of opposite major surfaces and a hole defined by a sidewall extending through said one-piece stator and opening at said major surfaces and dividing said one-piece stator into a pair of stator portions connected together by narrow bridges of magnetizable material having narrow cross sections; and a reinforcing ring made of non-magnetic material disposed within the hole through said one-piece stator, said reinforcing ring having a circumferential outer surface in continuous contact with a substantial portion of the sidewall of the hole through said one-piece stator and said reinforcing ring having an outer diameter effective to ensure a snug fit of said reinforcing ring within the hole through said one-piece stator to impart stiffness to a portion of said one-piece stator surrounding the hole therethrough including said narrow bridges for preventing deformation of said narrow bridges of said stator and the hole through said one-piece stator due to mechanical impact forces to which said one-piece stator is subjected.

4,270,067

ELECTRIC FRYING PAN

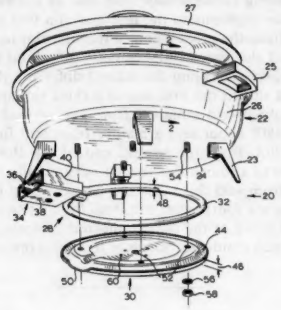
Alvin W. Thomas, Waterdown, and Benjamin G. Mills, Oakville, both of Canada, assignors to Trans-Canada Life-Ware Limited, Oakville, Canada

Filed Oct. 18, 1978, Ser. No. 952,883

Claims priority, application Canada, Oct. 18, 1977, 288966

Int. Cl.³ F27D *11/02*

U.S. Cl. 219—438 **4 Claims**



1. An improved electric frying pan comprising:

a pan constructed of an aluminum core and a layer of stainless steel on each of the surfaces thereof and including a bottom and a continuous peripheral side wall upstanding from the bottom, and at least two threaded studs connected to the underside of said bottom in spaced relationship with each other;

means, resistant to heat conduction, to support said pan in an elevated position;

a plurality of washers and companion threaded lock nuts adapted to be received as a set on each of said studs;

an electrically insulated heating element of a generally circular cross-section including a flat upper surface portion for contacting the bottom of said pan, said element adapted to be connected to an electrical source;

a support plate defining a depression of depth less than the thickness of said heating element and into which said heating element will lie, a series of first holes for engagement over said studs and a plurality of second holes adjacent the centre of said plate for drainage of water that may become trapped above said support plate;

in which by advancing said nuts onto said studs until said nuts are tight to the support plate, all parts of said heating element are subject to a compressive load.

4,270,068

FLUORESCENT DISPLAY DEVICE

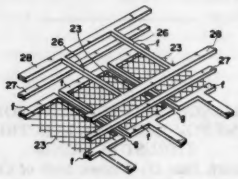
Takao Kishino; Kishio Kawasaki, and Nobuo Yamaguchi, all of Mobara, Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan

Filed Sep. 28, 1978, Ser. No. 946,731

Claims priority, application Japan, Oct. 6, 1977, 52-133663[U]

Int. Cl.³ H01J *1/72, 61/66*

U.S. Cl. 313—497 **1 Claim**



1. In a fluorescent display device having at least a filamentary cathode for emitting electrons, a plurality of pattern display sections each composed of a plurality of anodes each coated with a fluorescent material layer, a plurality of control electrodes electrically independent of one another provided opposite to said pattern display sections respectively, said anodes and control electrodes being selectively given drive signals thereby to make the electrons emitted from said filamentary cathode impinge on said anodes so as to display characters, numerals, graphic forms and the like on said pattern display sections, the improvement which comprises a plurality of auxiliary electrodes provided at or above and in the vicinity of gaps between said control electrodes respectively and at all times kept at a positive potential with respect to said filamentary cathode; said positively charged auxiliary electrodes shaping an electric field formed above said anodes in order to make said electrons emitted from said filamentary cathode impinge uniformly on the entire surface area of said selected anodes to thereby prevent display defects, to produce uniform light emission for a clear fluorescent display and to decrease the space between said pattern display sections; said auxiliary electrodes being supported above and in the vicinity of said gaps by at least two conductive support members that are located perpendicular to said gaps and said auxiliary electrodes; and said auxiliary electrodes being spaced above and in the vicinity of said gaps by at least two insulating spacers that are located perpendicular to said gaps and said auxiliary electrodes; said at least two insulating spacers separating said at least two conductive support members from said control electrodes.

4,270,069

TRAVELING WAVE TUBE AND METHOD OF MAKING SAME

Wolf Wiehler, Neubiberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 25, 1979, Ser. No. 60,373

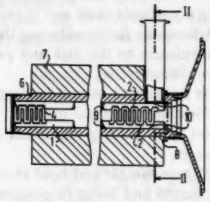
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2834135

Int. Cl.³ H01J *25/34*

U.S. Cl. 315—3.5 **9 Claims**

1. A method of making a traveling wave tube having a copper vacuum shell, a delay line in the form of a spiral or ring ribbon conductor formed of tungsten or molybdenum arranged between an electron generating system and an electron beam collector, and a plurality of dielectric support rods running parallel to the delay line and interposed between said delay line and the vacuum shell, comprising the steps of; providing a metalization on said support rods at locations which contact said delay line, assembling said delay line, said support

rods and said vacuum shell, placing the assembly within a thick-walled metal tube and heating said assembly to soldering



temperature, whereby said support rods and said delay line are soldered together and said vacuum shell is simultaneously shrunk onto said support rods.

4,270,070

TRAVELING WAVE TUBE

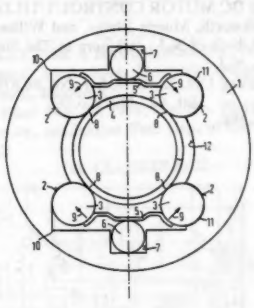
Franz Gross, Lörrach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 73,722

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1978, 2842255

Int. Cl.³ H01J *25/34*

U.S. Cl. 315—3.5 **7 Claims**



1. A traveling wave tube having an interior delay line housed within a vacuum envelope, a plurality of dielectric holding rods arranged parallel to one another and soldered to said delay line for supporting said delay line, said vacuum envelope having surfaces for receiving and locating said holding rods in good thermal contact therewith, said vacuum envelope having a longitudinal groove arranged between two of said holding rods and parallel thereto, a pressure element received within said groove, and a tension plate interposed between said pressure element and said two adjacent holding rods, for pressing said holding rods laterally against said surfaces, without exerting pressure on said delay line.

4,270,071

COMPOSITE BASE AND BALLAST MEMBER FOR COMPACT SINGLE-ENDED FLUORESCENT LAMP

Edward W. Morton, Teaneck, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 26, 1979, Ser. No. 97,278

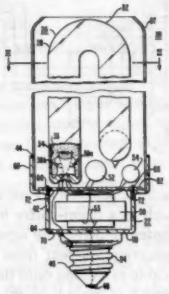
Int. Cl.³ H05B *41/16*

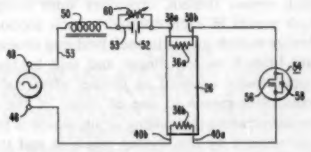
U.S. Cl. 315—62 **9 Claims**

1. A composite base member including a lamp ballast and electrical adapter member and adapted to have operatively mounted thereon a single-ended fluorescent lamp of the compact type, said lamp having an elongated envelope which is curved in predetermined fashion so that the maximum dimension of the volume occupied by said composite base member and said lamp as operatively mounted is sufficiently small to permit same to be utilized as the light source for a conventional-type fixture normally intended to be operated with incandescent lamp means, a pair of thermionic electrodes operatively positioned within said envelope proximate the ends thereof, a pair of lead-in conductors sealed through the ends of said envelope and connecting to each of said electrodes, and said envelope enclosing a discharge-sustaining filling and having phosphor material carried on the interior surface thereof, said composite base member comprising:

(a) a housing body having a hollow configuration of predetermined dimensions and having an open end portion, said lamp envelope adapted to be mounted to said composite base member and to project from the open end of said housing body, said electrical adapter member having two terminals and affixed to and projecting from the portion of said housing body which is opposite to the open end portion thereof, and said electrical adapter member operable to be connected to a source of household-type AC energy;

(b) said ballast comprising inductor means and capacitor





means connecting in series circuit, the reactance of said capacitor means at household frequency being a predetermined amount greater than the reactance of said inductor means; when said lamp is operatively connected in circuit to said composite base member, said series-connected inductor means and capacitor means are connected between one electrical terminal of said electrical adapter member and one of said lead-in conductors which connect to one of said lamp electrodes, the other of said lead-in conductors which connect to said one lamp electrode is connected through a current-interrupting means to one of said lead-in conductors which connect to said other electrode, and the other of said lead-in conductors which connect to said other electrode is connected to said other electrical terminal of said electrical adapter member; upon energization of said lamp as connected in circuit, said current-interrupting means completing a series circuit through said lamp electrodes to preheat same to a thermionic condition, and said current interrupting means thereafter opening to interrupt the series circuit with the resulting inductive surge initiating an operating discharge between said lamp electrodes; and

(c) mounting means affixed within said housing body and

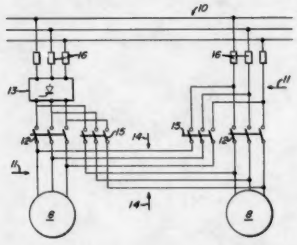
defining separate sections, said capacitor means positioned on one side of said mounting means and said inductor means positioned on the other side of said mounting means to provide a spacing between these two ballast elements, and said inductor means and said capacitor means having the ambient atmosphere in contact therewith to facilitate dissipation of heat therefrom.

4,270,072

CURRENT SUPPLY CIRCUIT OF CUTTING DRUM MOTORS ON A MINING MACHINE

Karl-Heinz Weber, Witten-Heven, Fed. Rep. of Germany, assignor to Gebr. Eickhoff Maschinenfabrik und Eisengeisserei m.b.H., Bochum, Fed. Rep. of Germany

Filed Jan. 18, 1979, Ser. No. 4,428
Int. Cl.[3] H02P *1/54*
U.S. Cl. 318—34 **4 Claims**



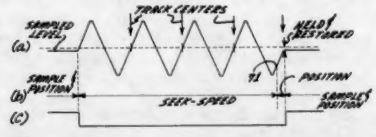
1. In a mining machine adapted to move back and forth along a mine seam such as a drum-cutter loader, having two cutting drums independently driven by separate drive motors each supplied with electrical current from a divided branch section of a common cable extending onto the mining machine, the combination therewith of branch switch means coupled in each divided branch section of the cable, controller means coupled in one divided branch section of the cable before the branch switch means therein, crossover lines bridging the branch switch means in each divided branch section of the cable, and bridge switch means in each bridging crossover line whereby said branch switch means and said bridge switch means are operatively coupled to deliver electrical current from said controller means to one of either of the seperate drive motors for rotating the cutting drum which is trailing in relation to movement by the mining machine and to deliver electrical current to the other of the separate drive motors from the remaining divided branch section of the cable for rotating the cutting drum which is leading in relation to movement by the mining machine.

4,270,073

POSITION CONTROL IN DISK DRIVE SYSTEM

Jefferson H. Harman, Thousand Oaks, Calif., assignor to Per-Sci, Inc., Los Angeles, Calif.

Filed Feb. 28, 1979, Ser. No. 16,066
Int. Cl.[3] G05D *23/275*
U.S. Cl. 318—632 **13 Claims**



1. In a disk drive system having a spinning disk; at least one transducer for cooperation with the disk in any of plural concentric tracks;

a linear motor for moving and positioning the transducer radially along a particular axis and in relation to the disk;

position feedback means for monitoring the position of the transducer in relation to the disk and providing a signal representative thereof;

a control circuit connected to and incorporating the feedback means for controlling the motor;

the improvement for offsetting the effect of tilting of said axis, comprising:

a relatively high gain sample and hold circuit connected to the feedback means and being responsive to the position signal; and

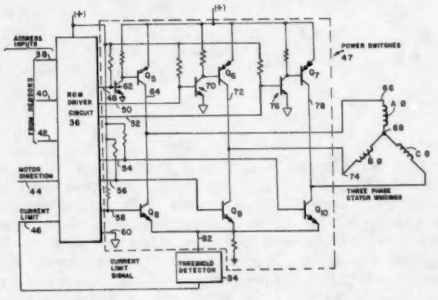
circuit means for causing the sample and hold circuit to stop sampling and to hold the most recently sampled value upon command execution by the control circuit to move the transducer to a different track, and to apply the held value to the control circuit to be directly effective for motor control while the transducer moves towards said different track for compensating the effect of gravity on the transducer as moved and positioned by the motor, sampling resuming after the transducer has arrived above said different track.

4,270,074

BRUSHLESS DC MOTOR CONTROL UTILIZING A ROM

James J. Duckworth, Morris Plains, and William J. Glennon, Maplewood, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Oct. 22, 1979, Ser. No. 86,874
Int. Cl.[3] H02P *6/02*
U.S. Cl. 318—254 **2 Claims**



1. In a control system for a brushless DC motor incorporating stator windings and having motor shaft position sensors connected to the input of a speed control circuit which in turn generates a digital signal at the output thereof, an improved motor driver circuit for the system, comprising:

a ROM connected at several of its inputs to the output of the speed control circuit, the ROM having a preselected program of operation;

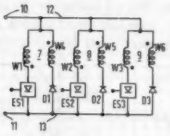
means connected to an output of the ROM for switching power between selected terminals of the motor stator windings

threshold detection means connected between the power switching means and an additional input to the ROM for generating an input signal to the ROM which causes the power switching means to terminate energization of the windings when the load current through the windings exceeds a preselected threshold level.

4,270,075
MOTOR ENERGIZED BY A DC VOLTAGE

Nils H. Nygaard, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Jun. 28, 1979, Ser. No. 52,936
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1978, 2829685
Int. Cl.³ H02P 6/02
U.S. Cl. 318—254 8 Claims

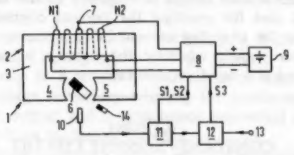


1. A motor of the type energized by a DC voltage, comprising, a plurality of poles and a like number of parallel subcircuits for said poles, each of said poles having operating and demagnetizing coils oppositely wound and inductively coupled, each of said subcircuits having first and second parallel arranged series circuits, each of said first series circuits including the corresponding one of said operating coils and a controllable switching element, and each of said second series circuits having only passive elements including the corresponding one of said demagnetizing coils and diode means poled oppositely of said switching element.

4,270,076
CIRCUIT FOR A BRUSHLESS D.C. MOTOR

Nils H. Nygaard, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Aug. 29, 1979, Ser. No. 70,619
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1978, 2839712
Int. Cl.³ H02P 6/02
U.S. Cl. 318—254 1 Claim

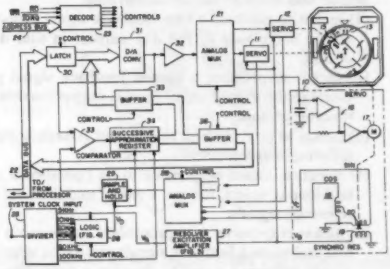


1. A DC motor assembly comprising, a permanent magnet rotor, a pair of poles, parallel circuit branches having a pair of windings with a common positive terminal connection for a DC voltage source, a pair of controlled rectifiers in said branches in respective series with said windings, a series branch connected to said parallel branches and having a smoothing choke and an electronic chopper switch connected in series, said series branch having a negative terminal connection for a DC voltage source, a return diode interposed between the junction of said smoothing choke and said chopper and said positive terminal connection, detector means for detecting the angular position of said rotor, means for switching said controlled rectifiers on and off in a push-pull mode, an extinguishing circuit which includes a series circuit of an extinguishing capacitor and a swing-over choke connected between the stream sides of said controlled rectifiers, said extinguishing circuit including extinguishing diodes connected in respective antiparallel relation to said controlled rectifiers, at least one free running diode bridging at least said smoothing choke and said chopper switch blocking diodes poled in the same sense as the said controlled rectifiers connected respectively between said controlled rectifiers and said windings and upstream from said series circuit containing said extinguishing capacitor and said swing-over choke.

4,270,077
DEMODULATORLESS SYNCHRO POSITION SENSOR APPARATUS UTILIZING SQUARE WAVE EXCITATION

Harold L. Swartz, Glendale, and Joseph M. Buemi, Jr., Phoenix, both of Ariz., assignors to Sperry Corporation, New York, N.Y.

Filed Mar. 10, 1980, Ser. No. 129,133
Int. Cl.³ G05B 1/06
U.S. Cl. 318—661 15 Claims



1. Apparatus for use with a synchro device having excitation input winding means and output winding means for providing a demodulated synchro output signal, comprising

excitation means for providing a square wave excitation signal to said excitation input winding means, said square wave excitation signal being coupled from said excitation input winding means to said output winding means for providing a square wave output signal thereat, and

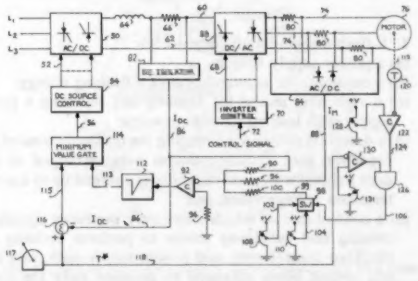
sampling means for sampling said square wave output signal at a predetermined time phase of said square wave excitation signal thereby providing a sampled square wave output signal,

said sampled square wave output signal providing said demodulated synchro output signal.

4,270,078
METHOD AND APPARATUS FOR A VARIABLE FREQUENCY INVERTER SYSTEM HAVING COMMUTATION FAULT DETECTION AND CORRECTION CAPABILITIES

Loren H. Walker, Salem, and John H. Cutler, Roanoke, both of Va., assignors to General Electric Company, Salem, Va.

Filed Apr. 24, 1979, Ser. No. 32,761
Int. Cl.³ H02P 7/42
U.S. Cl. 318—803 14 Claims



1. An inverter system for supplying controlled, variable

output voltage, current and frequency electrical power to a load comprising:

(a) a source of variable direct current power for providing a d.c. output current;

(b) control means for controlling the d.c. output current of said source;

(c) an inverter circuit for receiving said d.c. output current and for providing an a.c. output current of variable frequency and voltage and current for application to said load;

(d) a d.c. link circuit for carrying said d.c. output current from said source to said inverter circuit; and,

(e) circuit means for detecting a commutation fault condition within said inverter circuit comprising,

(1) means to produce a first feedback signal proportional to the magnitude of the d.c. current in said d.c. link circuit,

(2) means to produce a second feedback signal proportional to the magnitude of the a.c. output current of said inverter circuit.

(3) means to provide first and second reference signals of differing magnitudes,

(4) selection means responsive to an operational state of said load to select, for use, a one of said first and second reference signals,

(5) means responsive to a prescribed relationship of said first and second feedback signals and to the selected one of said reference signal to develop a correction signal, and,

(6) means for applying said correction signal to said control means to effect a reduction in the magnitude of the d.c. output current of said source.

4,270,079

FLASH DEVICE

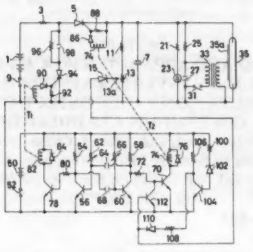
Kazuo Ikawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 6, 1979, Ser. No. 46,036

Claims priority, application Japan, Jun. 14, 1978, 53-71860

Int. Cl.³ H02J *15/00*; H05B *41/32*

U.S. Cl. 320—1 **8 Claims**



1. A flash device comprising:

(a) a power supply source;

(b) a capacitor for accumulation of a flashing energy;

(c) a switching means for forming and blocking a power supply path leading to said capacitor;

(d) a detection circuit for detecting the charged status of said capacitor, said detection circuit being arranged to produce a signal when said capacitor is charged up to a predetermined voltage value; and

(e) a control circuit which alternately produces signals for causing said switching means to perform forming and blocking control over said power supply path, said control circuit being arranged to produce only the signal which causes said switching means to block said power supply path in response to the signal produced by said detection circuit.

4,270,080

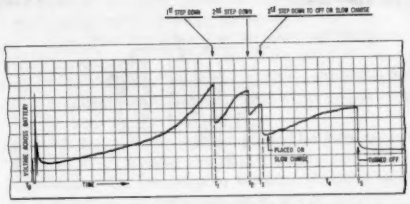
AUTOMATIC BATTERY CHARGE APPARATUS AND METHOD

Raymond T. Kostecki, Glenview, Ill., assignor to Sun Electric Corporation, Crystal Lake, Ill.

Filed Dec. 14, 1978, Ser. No. 969,299

Int. Cl.³ H02J *7/04*

U.S. Cl. 320—24 **28 Claims**



1. An automatic battery charger for charging a storage battery capable of conducting a battery charging current and generating a battery voltage, said charger comprising:

battery cable means for connecting the battery to the charger;

current control means operable in a first mode for conducting through the cable means a charging current regulated at a first predetermined level, and operable in a second mode for conducting through the cable means a charging current regulated at a second predetermined level less than the first predetermined level;

voltage monitor means operable in a first mode for generating a first monitor signal in response to a first battery voltage condition, and operable in a second mode for generating a second monitor signal in response to a second battery voltage condition less than the first battery voltage condition; and

sequencing means for operating the current control means and voltage monitor means in their first modes, for operating the current control means and voltage monitor means in their second modes in response to the first monitor signal, and for enabling the current control means to reduce the charging current in response to the second monitor signal, whereby the battery is automatically charged at a rapid yet safe rate.

4,270,081

CONSTANT-CURRENT CIRCUIT

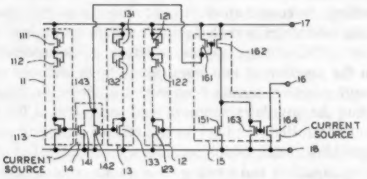
Kyuichi Hareyama, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1979, Ser. No. 83,552

Claims priority, application Japan, Oct. 11, 1978, 53-1255611

Int. Cl.³ G05F *3/08*

U.S. Cl. 323—316 **11 Claims**



1. A constant-current circuit comprising a first series circuit including a first number l of field effect transistors (l being a positive integer) connected in series between two potential, a second series circuit including a second number m of field effect transistors (m being a positive integer) connected in series between said two potential, a third series circuit includ-

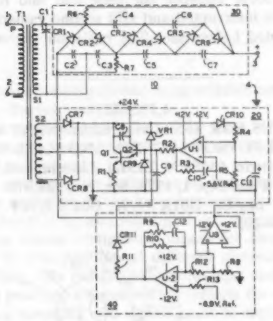
ing a third number n of field effect transistors (n being a positive integer) connected in series between said two potentials, said l, m and n being different each other, a first current source means adapted to output a current that is dependent upon a current flowing through said first series circuit in quantity, a second current source means adapted to output a current that is dependent upon a current flowing through said second series circuit in quantity, a third current source adapted to output a current that is dependent upon a current flowing through said third series circuit in quantity, and an output circuit means adapted to output a current obtained by subtracting the current of said second current source from the sum of the currents of said first current source and said third current source.

4,270,082

OPEN-CIRCUIT SHUNT-REGULATED HIGH-VOLTAGE CIRCUIT

Pradhumankumar S. Zaveri, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Jul. 24, 1979, Ser. No. 60,196
Int. Cl.³ G05F *1/64*
U.S. Cl. 323—248 **9 Claims**



1. A High-Voltage Circuit with Open Circuit Shunt Regulation comprising:

a ferroresonant transformer including a high-reactance transformer having a low voltage primary winding for connection to a source of AC electrical energy, and a high-voltage secondary winding for producing a high-voltage output; and a capacitance connected across the high-voltage secondary winding;

a low-voltage secondary control winding magnetically coupled with the high-voltage secondary winding of the high-reactance transformer; and

control means associated with the secondary control winding for regulating the high-voltage output of the ferroresonant transformer, the control means including:

means for rectifying the output voltage produced by the control winding;

means for controlling current flow through the control winding, said current controlling means being connected across the rectified output of the control winding thereby to regulate the output voltage thereof;

means for clamping peak control winding output voltage for producing a signal to effect operation of the current controlling means;

means for sampling and averaging the clamped control winding output voltage; and

means for comparing the averaged sampled control winding output voltage with a reference voltage and for producing a signal to effect operation of the current controlling means when the averaged sampled output voltage is greater than the reference voltage;

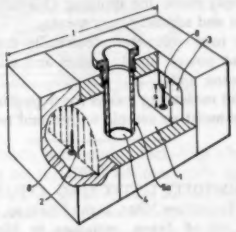
whereby the high-voltage output tracks the control winding output voltage.

4,270,083

MICROWAVE MOISTURE MEASURING INSTRUMENT WITH SWITCHABLE MEASURING REGIONS

Hans G. Fitzky, Odenthal; Jörg M. Söder; Franz Schmitt, both of Cologne; Norbert Bollongino, Leichlingen, and Helmut Rehrmann, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 1, 1979, Ser. No. 90,372
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1978, 2848993
Int. Cl.³ G01R *27/04*
U.S. Cl. 324—58.5 C **16 Claims**



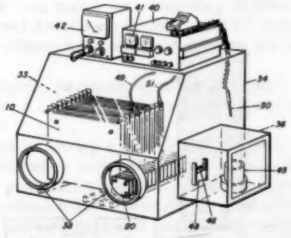
1. An apparatus for measuring the water content of a sample of an electrically non-conductive isotropic material, comprising means for producing a frequency modulated microwave signal, a sample container, a cavity measuring resonator receptive of the microwave signal in a transmission arrangement and configured to be loaded in the centre thereof with the sample container, a detector circuit for measuring the peak amplitude of the transmission signal from the resonator a change of which corresponds to a change in the quality factor caused by the sample introduced and means for switching over the mean frequency of the microwave oscillator in several steps to excite the resonator in a different field mode during each switch over thereby locating the sample in a mode region of the electrical measuring field for measuring high water content and in a maximum of the electrical measuring field for measuring low water contents.

4,270,084

APPARATUS AND METHOD FOR DETERMINING ELECTRICAL CONDUCTIVITY OF WATER VAPOR

Hugh R. Carlon, and Rex M. Pritt, both of Bel Air, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 9, 1979, Ser. No. 55,716
Int. Cl.³ G01R *27/02*
U.S. Cl. 324—65 R **11 Claims**



1. An apparatus for determining the conductivity and number of water ion clusters in a moist air environment which comprises:

a test chamber having a main chamber section, an access

compartment section proximately disposed adjacent to said main chamber section, and glove means for permitting the changing of electrical connections within said main chamber section;

means for introducing moist air into said main chamber section;

first plate means proximately disposed in said test chamber for providing a comparative reference insulator leakage level;

second plate means proximately positioned adjacent said first plate means, having a "cell factor" approximately 25 times larger than said first plate means, for collecting water ion clusters in said moist air environment;

power supply means for applying DC voltage alternately to said first and second plates means;

a vacuum tube voltmeter electrically connected in series with said power supply means and said first or second plate means; and

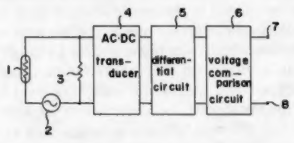
temperature measuring means for determining the temperature of a moist air sample within said test chamber.

4,270,085

HUMIDITY DETECTING APPARATUS

Jiro Terada; Tsuneharu Nitta, both of Katano, and Yukihiko Ise, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma, Japan

Filed Oct. 11, 1979, Ser. No. 83,933
Claims priority, application Japan, Oct. 11, 1978, 53-125339
Int. Cl.³ G01R *27/02*
U.S. Cl. 324—65 R **4 Claims**



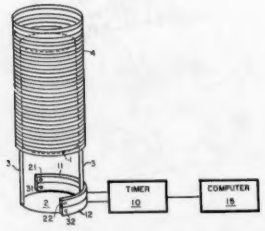
1. A humidity detecting apparatus comprising a humidity-sensing resistor and a differential circuit for differentiating the voltage variation accompanied by the resistance variation of the humidity-sensing resistor thereby to detect variations in the surrounding humidity of said humidity-sensing resistor.

4,270,086

ELECTROMAGNETIC PLUNGER DROP TIMER

Frederick E. Hankins, Flemington, and John H. Umberger, Holmdel, both of N.J., assignors to Research-Cottrell, Inc., Somerville, N.J.

Filed May 15, 1979, Ser. No. 39,174
Int. Cl.³ G04F *8/00, 10/00*
U.S. Cl. 368—118 **9 Claims**



1. A timer, comprising:

(a) a first radiation switch responsive to a radiation source and having a first radiation responsive means positioned apart from said radiation source for creating a first radiation circuit;

(b) a second radiation switch responsive to a radiation source and having a second radiation responsive means positioned apart from said radiation source for creating a second radiation circuit;

(c) means for producing a continuous train of clock pulses;

(d) a clock pulse gate responsive to said second radiation switch for selectively passing said continuous train of clock pulses;

(e) a first timing gate responsive to said first radiation switch for selectively passing said clock pulse train;

(f) a second timing gate responsive to said second radiation switch for selectively passing said clock pulse train;

(g) wherein said first and second radiation responsive means each include an amplifier circuit controlled by a radiation responsive diode for producing a first logic level signal when said radiation circuit is uninterrupted and a second logic level signal when said radiation circuit is interrupted; and

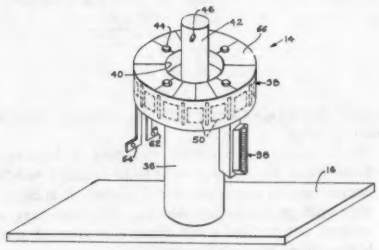
(h) a first counter responsive to the clock pulse output of said first timing gate for registering the number of pulses which occur between the time that said first radiation circuit is interrupted and said second radiation circuit is interrupted before said first radiation circuit is reestablished.

4,270,087

APPARATUS FOR TESTING PERMANENT MAGNETS USING ELECTRO-MAGNETS AND HALL SENSORS

Arthur K. Littwin, 65555 N. LeMai, Lincolnwood, Ill. 60646

Filed Sep. 1, 1978, Ser. No. 938,970
Int. Cl.³ G01R *33/12;* **G01N** *27/74*
U.S. Cl. 324—205 **9 Claims**



1. Apparatus for testing a plurality of permanent magnets arranged in a series, comprising,

an input circuit unit adapted for connection with a source of AC and including the primary of transformer means,

a series of electro-magnets positioned in close proximity and relation individually to respective ones of the permanent magnets, each related permanent magnet and electro-magnet forming a set,

means adapted for connection with a source of DC and establishing a magnetic field in each electro-magnet,

a sensing probe positioned in close proximity to each said set, each sensing probe including an input element and an output element,

the magnetic field passing through the related permanent magnet and electro-magnet of each set and through the sensing probe related to that set,

a series of sub-circuit units each including a secondary of said transformer means and the input element of one of the sensing probes in series,

an output circuit unit including the output elements of the sensing probes interconnected in series without electrical controls therebetween, and thereby establishing an accumulation of the voltages of all of said sets, and

means responsive to the output circuit unit for measuring the accumulated voltage.

4,270,088

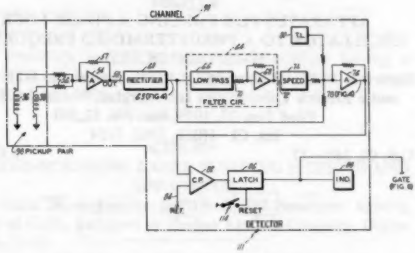
METHOD AND APPARATUS FOR MAGNETICALLY TESTING METAL TAPES

Herbert R. Weischedel, South Windsor, Conn., assignor to Otis Elevator Company, Hartford, Conn.

Filed Feb. 21, 1979, Ser. No. 13,657

Int. Cl.[3] **G01N** *27/82;* **G01R** *33/12*

U.S. Cl. 324—241 **8 Claims**



1. Apparatus for testing slotted, magnetizable metal tapes to locate cracks therein, comprising:

means for magnetizing a section of the tape,

means for sensing magnetic flux which radiates from cracks and slots in the tape,

means for providing an indication of the presence of the crack, in a portion of the tape, in response to an output signal, provided by said sensing means, characterized by:

said sensing means comprising means for simultaneously sensing, at two positions at different distances from the tape surface, flux radiating from the tape, and providing, for each position, a signal which reflects the sensed flux; means for summing said signals so as to remove components that are common to each signal for providing a difference signal comprising substantially the components caused by the flux from a crack; and means for deriving a signal representing the average level of said difference signal and for summing said average level signal with said difference signal and predetermined threshold for providing a crack identification signal comprising substantially a signal component caused by the flux from the crack; and

said means for providing an indication of the presence of a crack comprising means for comparing said crack identification signal with a predetermined reference signal, and resetable means, operable in response to an output signal from said comparing means for operating an indicator device, such as a light or alarm or both.

4,270,089

SCANNING MAGNETIC TEST HEAD

Peter Häberlein, Reutlingen, Fed. Rep. of Germany, assignor to Samsonite Corporation, Denver, Colo.

Filed Sep. 25, 1978, Ser. No. 945,681

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1977, 2745159

Int. Cl.[3] **G01R** *33/00;* **F16H** *19/06, 37/00*

U.S. Cl. 324—262 **8 Claims**

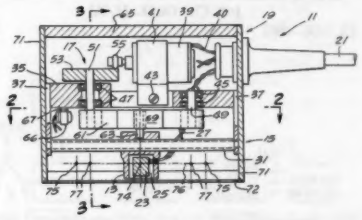
1. A magnetic test head having a support carrying at least one test probe, guide means defining a path of movement for said support, and a drive means, comprising:

an endless belt mounted on a pair of spaced guide rollers;

means interconnecting at least one of said guide rollers to said drive means;

pinlike means carried by said belt and interacting with said support for reciprocating said support and test probe along said path of movement for scanning the surface of an article to be tested, said pinlike means being magnetized and cooperating with a sensing element mounted adjacent the path of movement on moving therepast to generate a signal sequence in synchronism with the belt frequency of revolution; and

a housing having walls enclosing and supporting the test probe, guide means, endless belt, interconnecting means



and pinlike means, said housing including a bottom plate for contacting the surface of an object to be tested spaced from said test probe, guide means, endless belt, interconnecting means and pinlike means constructed of a material having relatively poor electrical conductivity and magnetic properties.

4,270,090

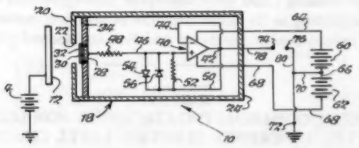
D.C. ELECTROSTATIC VOLTAGE FOLLOWER HAVING ION-COUPLED PROBE

Bruce T. Williams, 86 Park Lane Cir., Lockport, N.Y. 14094

Filed Apr. 24, 1978, Ser. No. 899,390

Int. Cl.[3] **G01R** *5/28, 29/12*

U.S. Cl. 324—457 **17 Claims**



1. A d.c. electrostatic voltage follower comprising:

(a) a detector adapted to be exposed to an electric field or potential associated with a surface;

(b) means operatively associated with said detector for ionizing the air in the region between said detector and the surface only to a degree necessary to detect the presence of any non-zero field or potential between said detector and said surface and providing a resistive coupling of said detector to said region for establishing an ionic current flow into said detector in response to said non-zero field or potential difference between said detector and said surface;

(c) a d.c. amplifier having an input and an output;

(d) means for d.c. coupling said detector to said amplifier input; and

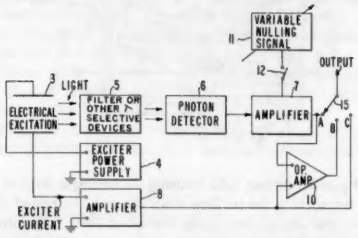
(e) said amplifier having a d.c. coupled feedback path between said output and said detector to provide a d.c. reference potential for said detector so as to be connected as a d.c. voltage follower whereby the flow of ionic current into said detector drives said amplifier to cause said output to change said detector reference potential in a manner reducing the field or potential difference between said detector and the surface to zero so that said amplifier output and said detector are driven to the same potential as that on the surface independent of the distance between the surface and said detector.

4,270,091

APPARATUS AND METHOD FOR MEASURING PRESSURES AND INDICATING LEAKS WITH OPTICAL ANALYSIS

Joseph K. Mann, Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Division of Ser. No. 872,209, Jan. 25, 1978, Pat. No. 4,147,431. This application Nov. 17, 1978, Ser. No. 961,806
Int. Cl.³ G01L *21/32*
U.S. Cl. 324—462 **2 Claims**



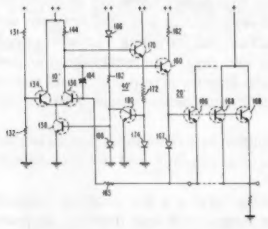
1. A vacuum pressure gauge comprising a tubular housing enclosing a Penning cell including a cathode and an anode, a window hermetically sealed to the side of said housing adjacent said cell, an opaque container attached to said housing and enclosing a photomultiplier, said container having a light filter therein aligned between said window and said photomultiplier, said container having a tubular portion connected to the side of said housing and containing said filter, said container having a second tubular portion substantially parallel to said tubular housing and containing said photomultiplier, first contact pins for said cathode and anode projecting through one end of said tubular housing , said photomultiplier having second contact pins projecting in the same direction as said first contact pins, and a unitary socket receiving said first and second pins.

4,270,092

CURRENT CONTROLLING CIRCUITRY FOR LOGICAL CIRCUIT REFERENCE ELECTRIC LEVEL CIRCUITRY

Warren A. Christopherson, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 18, 1979, Ser. No. 40,270
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—257 **8 Claims**



1. Current controlling circuitry for logical circuit reference electric energy level generating circuitry comprising

a differential amplifying circuit having an internal adjustable bias source, having one input terminal to which a primary reference potential is applied, having another input terminal, having an amplifying circuit bias source controlling terminal, and having an output terminal,

repeating circuitry having an input terminal connected to said output terminal of said differential amplifying circuit and having an output terminal at which said electric energy level is delivered,

a feedback lead connected between said output terminal of said repeating circuitry and said other input terminal of said differential amplifying circuit, and

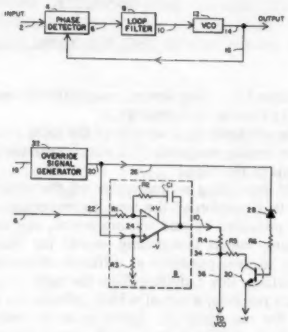
current flow controlling circuitry including a current mirror amplifier circuit having an input terminal connected to said output terminal of said differential amplifying circuit and having an output terminal connected to said bias source controlling terminal of said differential amplifying circuit.

4,270,093

APPARATUS FOR FORCING A PHASE-LOCK OSCILLATOR TO A PREDETERMINED FREQUENCY WHEN UNLOCKED

Gerard J. Miille, Redwood City, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Jun. 27, 1979, Ser. No. 52,380
Int. Cl.³ H03L *7/08, 7/14*
U.S. Cl. 331—17 **5 Claims**



1. In a phase-lock loop which includes a phase detector having an output terminal and a voltage control oscillator (VCO) having a control input terminal, apparatus for forcing the VCO to provide a predetermined output frequency under abnormal conditions comprising:

first means responsive to said abnormal operating conditions for generating an override signal at an output terminal;

second means, having a first input terminal connected to the output terminal of said phase detector, and having a second input terminal connected to the output terminal of said first means and responsive to said override signal for deriving a voltage having a predetermined value at an output terminal; and

third means, having a first input terminal connected to the output terminal of said first means and having a second input terminal connected to the output terminal of said second means, said third means being responsive both to said override signal and said predetermined voltage to develop a selected portion of said predetermined voltage which is available at an output terminal of said third means and is applied to the control input terminal of said VCO, whereby said predetermined frequency is obtained.

4,270,094

SEMICONDUCTOR LIGHT EMITTING DEVICE

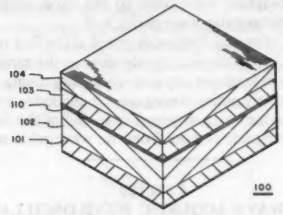
Nick Holonyak, Jr., Urbana, Ill., assignor to University of Illinois Foundation, Urbana, Ill.

Filed Oct. 13, 1978, Ser. No. 951,515
Int. Cl.³ H01S *3/19*
U.S. Cl. 331—94.5 H **28 Claims**

1. A semiconductor heterostructure device, comprising:

first and second relatively wide bandgap semiconductor regions of opposite conductivity types; and

a single quantum well active layer disposed between said first and second regions, said active layer being formed of



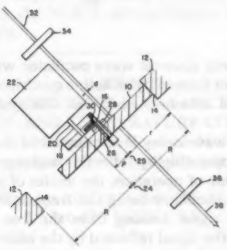
a relatively narrow bandgap semiconductor having a thickness which is in the range between about 100 angstroms and 200 angstroms.

4,270,095

CYCLOID-SCANNING LASER PUMPING METHOD AND APPARATUS

Steve Guch, Jr., Sepulveda, and Gordon L. Lundgren, Agoura, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed May 3, 1979, Ser. No. 35,680
Int. Cl.³ H01S *3/08*
U.S. Cl. 331—94.5 L **8 Claims**



1. A method for pumping a laser comprising:
exposing a disk having laser material distributed substantially throughout said disk to a pumping light beam of a wavelength capable of exciting said laser material to a condition of population inversion; and
moving the center of said disk in a circular orbit about a fixed point in a plane perpendicular to said pumping light beam while rotating said disk about its center in said plane in a rotational direction opposite to that in which its center is moved such that said pumping light beam impinges upon said disk along a cycloidal path.

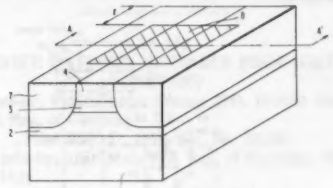
4,270,096

SEMICONDUCTOR LASER DEVICE

Izuo Hayashi, and Takao Furruse, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed May 14, 1979, Ser. No. 38,963
Claims priority, application Japan, May 12, 1978, 53-56781
Int. Cl.³ H01S *3/19*
U.S. Cl. 331—94.5 H **5 Claims**

1. A semiconductor laser device comprising a semiconductor crystal having a pair of principal surfaces and optically reflective first and second side surfaces constituting an optical resonator therebetween, and a pair of electrodes, said semiconductor crystal including an active layer bounded by said first and second side surfaces and four heterojunction interfaces within said crystal, said active layer having an exciting region elongated within said crystal between said first and second side surfaces and bounded by said four heterojunction interfaces, one and the other ends of said exciting region being spaced apart from said first and second side surfaces, respectively, said pair of electrodes being provided on said pair of principal surfaces so as to supply injection current to said exciting region to emit a light, said active layer further having first and second non-exciting regions at said one and other ends of said exciting



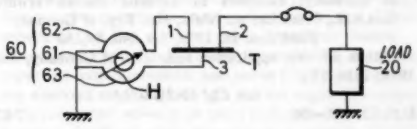
region, said first non-exciting region extending from said one end of said exciting region to said first side surface and said second non-exciting region extending from said other end of said exciting region to said second side surface, said non-exciting regions being transparent to said light emitted from said exciting region, and the band gap of said exciting region being narrower than that of said non-exciting regions.

4,270,097

OSCILLATOR ELECTRONICALLY TUNABLE WITHIN A VERY WIDE FREQUENCY BAND

Yves Le Tron; Juan Obregon; Pierre-Georges Marechal, and Serge Barvet, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 6, 1979, Ser. No. 17,970
Claims priority, application France, Mar. 3, 1978, 78 06431
Int. Cl.³ H03B *5/18*
U.S. Cl. 331—96 **5 Claims**



1. An electronic oscillator of the type comprising:
a three terminal active component to which are connected, by their first terminals a tuning dipole, a load dipole and a feedback loop comprising a coupling dipole, the second terminals of these dipoles being common, wherein the tuning dipole and the coupling dipole comprise reactors which are simultaneously variable by electronic means;
said variable reactors comprising resonators having a common sphere of monocrystalline magnetic material such that the reactance of said resonators is correspondingly varied by a common magnetic field.

4,270,098

MEANS FOR LINEARIZING A VOLTAGE VARIABLE CAPACITOR CONTROLLED OSCILLATOR

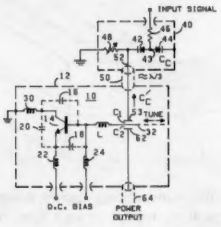
George A. Bowman, Arlington Hts., Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 864,169, Dec. 27, 1977, abandoned.
This application Apr. 5, 1979, Ser. No. 27,541
Int. Cl.³ H03B *5/18*
U.S. Cl. 331—96 **6 Claims**

1. In a voltage controlled oscillator wherein an active gain stage is arranged in a circuit configuration to oscillate at a

frequency which is a function of a variable reactance coupled to said circuit, the improvement comprising:

voltage variable capacity means comprised of a first and a second voltage variable capacity diode, said diodes having a common connection, arranged to receive a control voltage at the common connection to produce a capacitance related to the level of said control voltage, and with the free end of the first diode being coupled to AC ground;



an impedance transforming means, coupling the free end of the second voltage variable capacity diode to said voltage controlled oscillator for predeterminedly transforming the capacity means such that it is suitable for varying the frequency of oscillation of the oscillator; and

variable impedance means, coupled to said impedance transforming means and to the free end of the second voltage variable capacity diode, said variable impedance means being of predetermined value such that the frequency of oscillation of said oscillator is linearly related to the amplitude of the control voltage.

4,270,099

CIRCUIT ARRANGEMENT FOR GENERATING AND STABLY AMPLIFYING BROADBAND RF SIGNALS

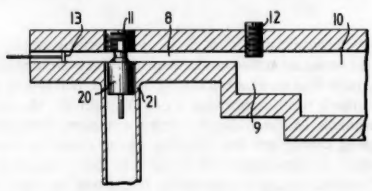
Hardial S. Gill, and Othmar Tegel, both of Backnang, Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 18, 1979, Ser. No. 49,158

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1978, 2826767

Int. Cl.³ H03B 9/14

U.S. Cl. 331—96 **7 Claims**



1. A circuit arrangement for generating and stably amplifying broadband rf signals comprising:

A first rectangular waveguide for operation in a frequency range below its cutoff frequency;

An active semiconductor element disposed in the first rectangular waveguide;

Means for supplying a direct voltage to the semiconductor element;

A second rectangular waveguide for operation at the operating frequency, said first rectangular waveguide having a height and width which is less than that of the second rectangular waveguide;

At least one waveguide section connecting the first and second rectangular waveguides and having the same width as the second rectangular waveguide and a height less than the height of the second rectangular waveguide, the waveguide section matching the cross section of the first rectangular waveguide to the cross section of the second rectangular waveguide; and

A plurality of tuning devices disposed in the first rectangular waveguide and the waveguide section, the tuning devices including at least one capacitively acting tuning screw and an inductively acting tuning device, the inductively acting tuning device being disposed in an end of the first rectangular waveguide remote from the waveguide section.

4,270,100

MICROWAVE ACOUSTIC WAVE OSCILLATOR

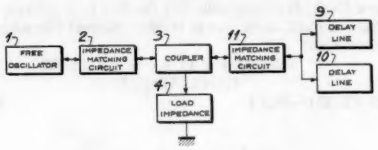
Jean-Pierre Bergero; Yves Charlet, and Philippe Leschaeve, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 12, 1979, Ser. No. 29,271

Claims priority, application France, Apr. 18, 1978, 78 11314

Int. Cl.³ H03B 3/06

U.S. Cl. 331—107 A **7 Claims**



1. A microwave acoustic wave oscillator which comprises:

a free oscillator formed by an active quadripole connected to two passive networks such that this system enters into oscillation;

two acoustic wave delay lines coupled to the free oscillator which are operating by reflection and reproducibly select a single mode of operation, the modes of operation of the microwave oscillator being the frequencies at which the microwave signal coming from the free oscillator is in phase with the signal reflected by the acoustic wave delay lines, the first line imposing for one reciprocation a delay $2\tau_1$ sufficient to obtain a high overvoltage coefficient and, hence, high short-term stability of the microwave oscillator at certain points of the band of frequencies separating two successive modes of operation, from which points the working point will be selected, and the second line imposing for one reciprocation a delay $2\tau_2$ which is a sub-multiple of the delay imposed by the first line, enabling the frequency band separating two successive modes of operation to be brought to $1/2\tau_2 = a/2\tau_1$, where a is integer greater than 1.

4,270,101

RELAXATION OSCILLATOR HAVING SWITCHED CURRENT SOURCE

Adel A. A. Ahmed, Clinton Township, Mercer County, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 19, 1979, Ser. No. 4,843

Int. Cl.³ H03K 3/82, 3/352

U.S. Cl. 331—111 **11 Claims**

1. In a relaxation oscillator of the type including a capacitor having a first plate connected to a reference potential, and having a second plate,

means for supplying current of a first polarity to a first node connected at least at selected times to the second plate of the capacitor for charging the capacitor, and

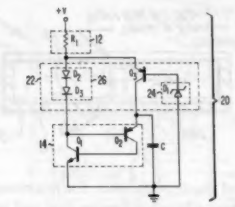
an SCR having a main conducting path connected across the capacitor for discharging the capacitor responsive to the voltage thereacross reaching a threshold voltage level,

and having a gate electrode at which there is a demand for gate current of said first polarity when the SCR is conductive,

the improvement comprising:

means connecting the gate electrode of the SCR to the first node, for diverting substantially all the current supplied by the means for supplying current to the gate electrode of the SCR when the SCR is conductive;

a transistor having output and common electrodes with a main-conduction path therebetween, and having an input



electrode, the output electrode connecting to the second plate of the capacitor and the common electrode connecting to the first node; and

means for applying a bias voltage to the input electrode of said transistor, which bias voltage is unidirectional with respect to the reference potential and is not related to the conduction of the SCR through its main conduction path, for conditioning said transistor for conduction and nonconduction responsive to the gate electrode current of the SCR when the SCR is nonconductive and conductive, respectively.

4,270,102

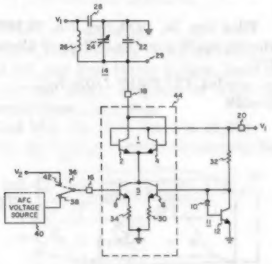
INTEGRATED CIRCUIT FM LOCAL OSCILLATOR WITH AFC CONTROL AND TEMPERATURE COMPENSATION

Glenn B. Gawler, Liverpool, and Robert J. McFadyen, Syracuse, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Apr. 26, 1979, Ser. No. 33,358

Int. Cl.³ H03B *5/12*

U.S. Cl. 331—115 **3 Claims**



1. A local oscillator circuit for fabrication by an integrated circuit process of a given high frequency performance, having an improved higher frequency range, said circuit including in combination

A. a tuned circuit, tunable over said higher frequency range,

B. a cross coupled differential pair of transistors with the collector and base of one transistor coupled to the base and collector, respectively, of the other transistor and the emitters of said transistors joined together, the collectors of said pair of transistors being coupled to said tuned circuit,

C. said transistors with current flow therein being constructed to exhibit an emitter current responsive variable capacitance and substantial negative conductance over said higher frequency range, said construction including the provision of a double base contact stripe for reduction of the base resistance, and

D. current source means coupled to said emitters for providing an emitter current in said transistors at a level providing said negative conductance to ensure oscillation and including a controlled current component for capacitance control of the oscillation frequency.

4,270,103

AMPLIFIER HAVING A VARIABLE PROPAGATION CONSTANT

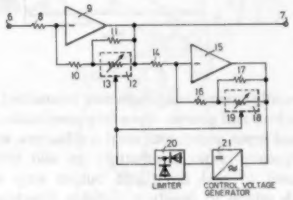
Ernst Schröder, Pinkenburger Strasse 25D, D-3000 Hannover 51, Fed. Rep. of Germany

Filed Mar. 22, 1979, Ser. No. 23,006

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1978, 2812431

Int. Cl.³ H03H *11/12;* **H04B** *1/64*

U.S. Cl. 333—14 **5 Claims**



1. A circuit arrangement for receiving an audio frequency signal applied to an input terminal thereof, and generating an output signal at an output terminal thereof, comprising:

a first signal path having an input coupled to said input terminal and an output coupled to said output terminal, said first signal path including a first amplifier having a first negative feedback path connected between its input and output, said first negative feedback path comprising a first variable resistor for varying the transmission characteristic of said first path and a first impedance means;

a second signal path having an input coupled to one of said input and output terminals, said second signal path including a second amplifier having a second negative feedback path connected between its input and output, said second negative feedback path comprising a second variable resistor for varying the transmission characteristic of said second path and a second impedance means;

a control voltage generator coupled to the output of said second signal path for generating a direct voltage corresponding to the alternating voltage at the output of said second signal path; and

limiting means coupled between the output of said control voltage generator and said first and second variable resistors, said first and second variable resistors being varied in accordance with the output of said control voltage generator over a predetermined range determined by said first and second impedance means and said limiting means.

4,270,104

PHASE EQUALIZER IN MICROWAVE TRANSMISSION LINE

Alfred Schwarzmann, Mt. Laurel, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 23, 1979, Ser. No. 96,823

Int. Cl.³ H01P *1/20*

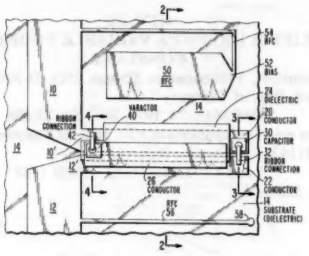
U.S. Cl. 333—28 R **5 Claims**

1. A resonant circuit phase equalizer in a microwave stripline transmission line having a planar substrate with a ground plane conductor on the bottom surface and input and output strip conductors on the top surface, comprising

two quarter-wavelength-long strip conductors extending in

close parallel relationship on said substrate from integral contact with adjacent ends of respective input and output strip conductors, to capacitively couple microwave signals from said input strip conductor through said two parallel strip conductors to said output strip conductor,

a first direct-current-blocking and radio-frequency tuning capacitor connected across the remote ends of said quarter-wave strip conductors,



an electrically-controllable capacitor connected across the near ends of said quarter-wave strip conductors connected with said input and output strip conductors, and

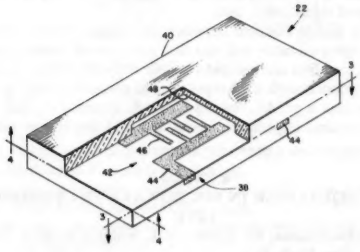
radio-frequency choke conductors on said substrate and connected to said input and output strip conductors through which to supply a variable direct-current bias voltage to said electrically-controllable capacitor to vary the capacitance thereof and the center frequency tuning of the resonant circuit.

4,270,105

STABILIZED SURFACE WAVE DEVICE

Thomas E. Parker, Framingham, and Clarence J. Dunnrowicz, Waltham, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed May 14, 1979, Ser. No. 39,024
Int. Cl.³ H03H *9/25, 9/42, 9/68*
U.S. Cl. 333—155 **6 Claims**



1. A surface acoustic wave device comprising:

a crystalline base;

an assembly of electrodes deposited on a surface of said base; and

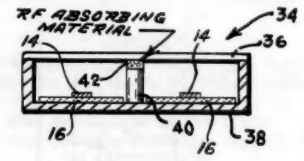
means for passivating said surface comprising a coating deposited on said surface and on said electrode assembly, said coating being formed of a hydrophobic polymer.

4,270,106

BROADBAND MODE SUPPRESSOR FOR MICROWAVE INTEGRATED CIRCUITS

James D. Woermbke, Glen Burnie, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 7, 1979, Ser. No. 91,993
Int. Cl.³ H01P *1/16*
U.S. Cl. 333—246 **2 Claims**



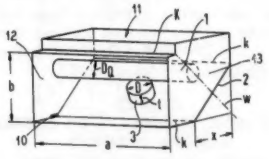
1. A broadband mode suppressor for microwave integrated circuits comprising: a housing having first and second walls, a top and bottom; a microwave integrated circuit located on the bottom of the housing, said circuit including chip components forming circuit discontinuities and causing undesired RF modes; a metal post mounted on the bottom of the housing and extending in the direction of the top of the housing for suppressing an undesired fundamental radiation mode; a lossy RF absorbing pellet positioned between the said post and top of the housing for suppressing RF modes at higher harmonic frequencies and lower frequencies than the fundamental frequency.

4,270,107

RECTANGULAR WAVEGUIDE ELBOW FORMED WITH A TRUNCATED CORNER AND HAVING PIPES FORMED THEREIN

Eberhard Schuegraf, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 24, 1979, Ser. No. 78,189
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842577
Int. Cl.³ H01P *1/02, 5/02*
U.S. Cl. 333—249 **3 Claims**

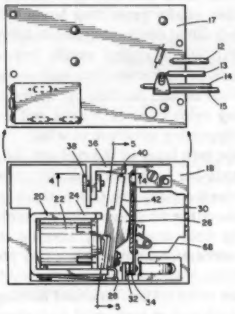


1. A rectangular waveguide E-elbow with wide and narrow sides in which the wide side of the waveguide is bent to form an outside corner which is symmetrically beveled to form a conductive level plane (2) comprising, an electrically conductive cross bar (1) mounted in said waveguide at the median of the geometrical angle of the bend, said cross bar aligned parallel to the wide sides of said waveguide and extending between the opposite narrow sides of said waveguide; and a second conductive means (3) mounted at the diagonal point of intersection of said level plane (2) and projecting into the inner space of said waveguide.

4,270,108
BISTABLE CONTROL SWITCH

William W. Wright, Wheaton, Ill., assignor to Guardian Electric Manufacturing Company, Chicago, Ill.

Filed Dec. 10, 1979, Ser. No. 101,469
Int. Cl.[3] H01H 5/00
U.S. Cl. 335—188 8 Claims



1. In a bistable position switch comprising a coil with a field piece, an armature pivotally connected to the field piece and responsive to current passing through the coil, the improvement of an armature holding end release mechanism for effectively maintaining the armature in a first coil actuated position upon termination of current through the coil and in a second release position upon subsequent actuation of the armature by the coil followed by release thereof, said improvement comprising in combination:

(a) a cantilever member projecting from the armature, said member being flexible in a plane generally transverse to the direction of armature movement;

(b) a cam guide member fixed with respect to the cantilever member, said cam guide member being cooperative with the cantilever member and including a

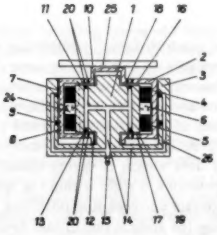
(i) first track for guiding the cantilever member to a notch holding position, and

(ii) a second track for guiding the cantilever member from the notch holding position to a release position.

4,270,109
BOUNCE-FREE LIFTING DEVICE

Eberhard Riessland, and Karl-Heinz Krüger, both of Dresden, German Democratic Rep., assignors to VEB Elektromat, Dresden, German Democratic Rep.

Filed May 15, 1979, Ser. No. 39,568
Claims priority, application German Democratic Rep., Jun. 1, 1978, 205722
Int. Cl.[3] H01F 1/00, 3/00, 7/00
U.S. Cl. 335—277 11 Claims

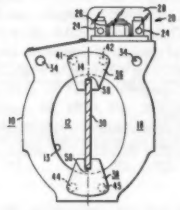


1. Bounce-free lifting device, comprising: at least one electromagnet having a stationary core defining a peripheral surface and two opposite end surfaces; a guide wall supporting said core and forming an interspace with said peripheral surface; a lifting armature disposed for reciprocating movement in said interspace, and enclosing said core, said armature defining two opposite abutment surfaces facing, respectively, said end surfaces and defining a gap therebetween; gas conduits provided in said core and in said guide wall; lateral nozzles arranged in said guide wall for connecting said conduits with said interspace and nozzles arranged in said end surfaces for connecting said conduits in said core with said gap.

4,270,110
BUS BAR ADAPTOR FOR WINDOW TYPE CURRENT TRANSFORMERS

Paul W. Martincic, Sharpsville, and Charles E. Greene, Sharon, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 6, 1980, Ser. No. 127,618
Int. Cl.[3] H01F 40/06
U.S. Cl. 336—174 4 Claims



1. A bus bar adaptor arrangement and window type current transformer including a casing having a continuous inner wall defining a center opening for receiving a primary conductor and a pair of end walls extending around the ends of said opening, comprising:

plural retainer projections extending outwardly from both of said end walls of said transformer casing at predetermined symmetrically disposed positions thereof with each being in mutual axial alignment with another retainer projection extending from the other transformer end wall;

a one-piece bus bar adaptor made of a molded insulating material including a U-shaped side configuration having a base conforming to the inner wall surface of said transformer opening, further including a pair of flat attachment members extending outwardly from said base so as to define the sides of said U-shaped configuration positioned over the ends of said current transformer, and still further including a mounting portion having parallel spaced side walls defining a bar receiving slot disposed inwardly from said base, said attachment sides including recessed portions in mutually facing relationship wherein each recess conforms to the shape of said retainer projections and receives said projections in a complementary fashion so as to attach said adaptor within said transformer opening in a predetermined indexed relationship such that said bar receiving slot is disposed parallel to the axis of said opening for receiving a rectangular bar conductor said adaptor being detachably assembled to said retainer projections.

4,270,111
ELECTRICAL INDUCTIVE APPARATUS

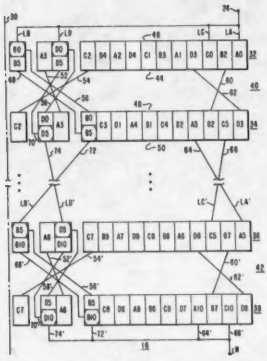
Lloyd E. Meyer, Delaware Township, Mercer County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 25, 1980, Ser. No. 124,485
Int. Cl.[3] H01F 15/14
U.S. Cl. 336—70 4 Claims

1. An interleaved turn winding assembly for electrical inductive apparatus, comprising:

a plurality of axially spaced pancake coils, each having a plurality of insulated conductor turns defining first, second, third and fourth electrical paths therethrough,

and means interconnecting said plurality of pancake coils such that said first, second, third and fourth electrical paths are continued from coil to coil, with said interconnecting means defining an interleaving pattern, which mutually interleaves the turns of the first, second, third and fourth electrical paths wherein physically adjacent turns are from different electrical paths, and from electrically different portions of the winding assembly,



said interleaving pattern connecting the pancake coils in basic pairs, wherein the interleaving pattern is completed over two adjacent pancake coils, and then repeated in succeeding basic pairs,

each of said first, second, third and fourth electrical paths having N conductor turns in one pancake coil of a basic pair, and N+1 turns in the other, with the additional turns from two of the paths being in one pancake coil, and the additional turns from the remaining two paths being in the other pancake coil, such that each pancake coil has the same total number of conductor turns, to provide an average of N+½ conductor turns in each electrical path, in each pancake coil.

4,270,112

NORMAL CONDUCTIVE OR SUPERCONDUCTIVE MAGNET COIL

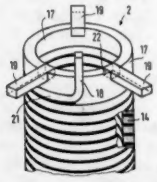
Hans-Jörg Schneider-Muntau, Meyland, and Klaus Hackbarth, Sassenage, both of France, assignors to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V., Göttingen, Fed. Rep. of Germany

Filed Feb. 13, 1979, Ser. No. 11,925

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1978, 2811504

Int. Cl.³ H01F *27/30*

U.S. Cl. 336—197 **16 Claims**



1. A high field magnet coil for generating high magnetic fields, the magnet coil being comprised of helical conductor turns so as to have a substantial radial thickness wherein the magnet coil is radially subdivided into a plurality of cylindrical thin individual coils, concentrically nested one inside another, each of said individual coils being comprised of a single conductor turn layer that is maintained both mechanically and electrically separated from adjacent individual coils throughout the length of its conductor turns so as to define a gap between all adjacent coils throughout their conductor turn layers, each individual coil having at each axial end a conductor end portion axially projecting beyond its conductor turn layer, each individual coil having two holding cylinders, one at each axial end, which extend axially beyond the conductor turn layer, each of said conductor end portions being fixed to a respective one of said holding cylinders, each coil together with a holding cylinder at each axial end comprising an individual, self-supporting structure in which the conductor turns throughout the turn layer of the coil and the holding cylinders are bonded together by a mechanically strong adhesive, such that the conductor turns are equidistantly spaced from each other throughout the turn layer; the assembly of said plurality of coils being held together by holding means for axially, radially and circumferentially fixing said plurality of coils in place, said holding means engaging the holding cylinders and being common to all coils so that said holding means individually acts on each coil at both axial ends thereof.

4,270,113

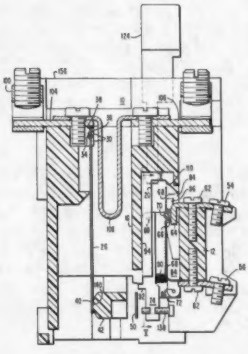
THERMAL OVERLOAD RELAY

Paul T. Anderson, Brighton Township, Beaver County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 6, 1979, Ser. No. 28,021

Int. Cl.³ H01H *71/16*

U.S. Cl. 337—75 **6 Claims**

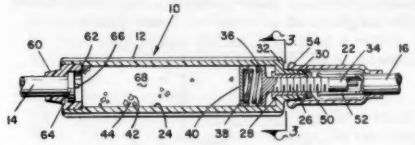


1. An electrical control device comprising a housing, one pair of spaced terminals on the housing, one of the terminals comprising a stationary contact within the housing, a movable contact mounted on and extending from the other terminal and being biased in one of the open and closed positions of the stationary contact, the movable contact comprising a resilient elongated contact arm which is spring-biased in one of the open and closed positions, a slide within the housing for moving the movable contact between said positions, latch means on the slide for latching the slide in one of said positions and being spring-biased in the other position, manual reset means for moving the slide to a latched position, at least one pole unit including a bimetal element responsive to current flow to effect heating thereof, and means associated with the latch menas for unlatching the latch means.

4,270,114
ENERGY TRANSMISSION DEVICES

David L. Cannom, 276 Cabrillo, #C, Costa Mesa, Calif. 92627

Filed Apr. 7, 1980, Ser. No. 137,590
Int. Cl.[3] H01C 8/00
U.S. Cl. 338—224 7 Claims



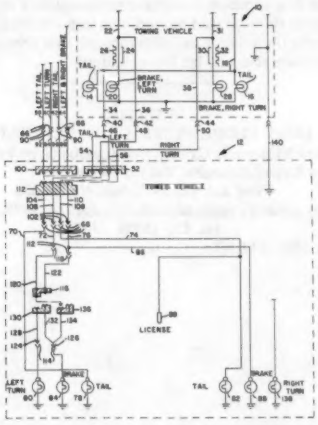
1. An energy transmission device comprising a pair of electrodes electrically interconnected by a body of irregularly shaped granules of a metal, and enclosure means for retaining said body of granules compressed sufficiently to complete an electrical path between said electrodes the direct current impedance of which exceeds the impedance exhibited by a solid body of said metal which occupies an equal volume;

said granules of metal comprising at least one-half by volume of copper.

4,270,115
ADAPTER FOR ADAPTING SIGNAL LAMP SYSTEMS OF TOWED AND TOWING VEHICLES

Robert N. Bonnett, 481 Yorkshire Dr., Severna Park, Md. 21146

Filed Dec. 15, 1978, Ser. No. 969,864
Int. Cl.[3] B60Q 1/46; H01R 11/00
U.S. Cl. 340—67 4 Claims

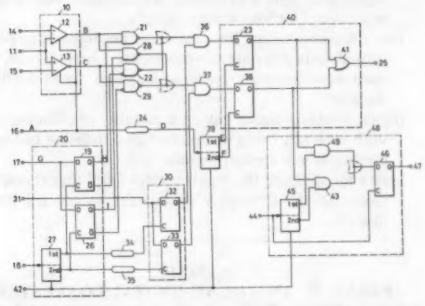


1. An adapter for adapting lamps of a four wire lamp system of a towed vehicle to lamps of a three wire lamp system of a towing vehicle, the four wire system including first and second turn lamps and first and second brake lamps, the first and second lamps being on opposite sides of the towed vehicle, an electrical lead normally extending from the power source on the towed vehicle to the first turn signal lamp, a pair of normally interconnected electrical leads normally extending from the power source on the towed vehicle to the respective first and second brake lamps, the three wire system including first and second combined turn and brake lamps on opposite sides of the towing vehicle corresponding to the location of the first and second lamps on the towed vehicle, said adapter comprising means for disconnecting from the power source on the towed vehicle the lead connected to one of the first and second turn lamps and also the interconnected pair of leads to the first and second brake lamps, means for disconnecting from said one turn lamp the lead normally connecting same to the power source and connecting said lead to one of the brake lamps, means for disconnecting one of said pair of normally interconnected leads from the said one of said brake lamps, means for connecting the former turn lamp lead following connection thereof to the first brake lamp of the towed vehicle to the first combined brake and turn lamp of the towing vehicle, and means for connecting the remaining one of the pair of normally interconnected leads connected to the second brake lamp of the towed vehicle to the second combined brake and turn lamp of the towing vehicle, whereby the former brake lamps of the towed vehicle are converted into combined turn and brake lamps operable in unison with the corresponding lamps on the towing vehicle.

4,270,116
HIGH SPEED DATA LOGICAL COMPARISON DEVICE

Yoshichika Ichimiya, Tokorozawa; Tsuneta Sudo, Kodaira; Hiromi Maruyama, Gyoda; Shigeru Sugamori, Gyoda; Susumu Sumida, Gyoda; Masao Shimizu, Gyoda, and Toshiaki Wakita, Gyoda, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation and Takeda Riken Kogyo Kabushikikaisha, both of Tokyo, Japan

Filed Aug. 24, 1979, Ser. No. 69,347
Claims priority, application Japan, Aug. 28, 1978, 53-105301
Int. Cl.[3] G06F 7/04
U.S. Cl. 340—146.2 9 Claims



1. A logical comparison device operatively connected to receive a reference logical data train, a clock signal and input logical data, comprising:

a data dividing circuit for generating spatially divided reference logical data by sequentially dividing the reference logical data train for each time slot into n (n being an integer greater than 1) data trains sequentially displaced one time slot apart in phase, each data of the n data trains having an n time slot length;

a clock signal dividing circuit for generating spatially divided clock signals by dividing the clock signal, for determining the timing of comparison, into n clock signals displaced one time slot apart in phase and occurring with a period of n time slots;

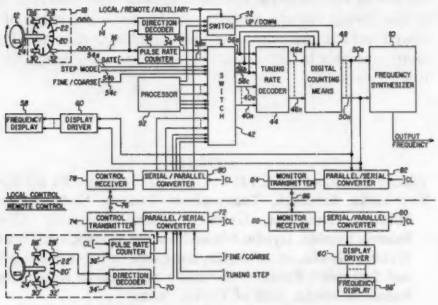
comparator means, operatively connected to said data dividing circuit, for comparing the input logical data to the spatially divided reference logical data to detect whether or not they are coincident with each other, wherein the timing of comparison is determined in accordance with the clock signal; and

a comparison output circuit, operatively connected to said clock signal dividing circuit and said comparator means, for reading out the comparison results from said comparator means by the spatially divided clock signals.

4,270,117
VARIABLE RATE DIGITAL CONTROLLER FOR A FREQUENCY SYNTHESIZER

Paul J. Ziegelbein, Cedar Rapids; Sylvan L. Dawson, Marion, and Gerald A. Erickson, Cedar Rapids, all of Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 2, 1979, Ser. No. 8,897
Int. Cl.³ G01R *23/10*
U.S. Cl. 340—168 B **13 Claims**



1. A variable rate digital controller for a frequency synthesizer which is responsive to digital signals for controlling its frequency, comprising:

rate indicating means for periodically generating a digital signal from among a plurality of such digital signals representative of various tuning rates;

rate decoding means for receiving the digital signals and providing in response thereto digital control words, with each word being associated with at least one of the digital signals;

digital counting means having a plurality of counting rates, with each rate being determined by a different one of the control words applied thereto, and

means for applying the digital count of said digital counting means to the frequency synthesizer to control its frequency.

4,270,118
PARALLEL ANALOG-TO-DIGITAL CONVERTER

Adrian P. Brokaw, Burlington, Mass., assignor to Analog Devices, Incorporated, Norwood, Mass.

Continuation of Ser. No. 867,102, Jan. 5, 1978, abandoned. This application Jan. 22, 1979, Ser. No. 5,526
Int. Cl.³ H03K *13/17*
U.S. Cl. 340—347 AD **18 Claims**

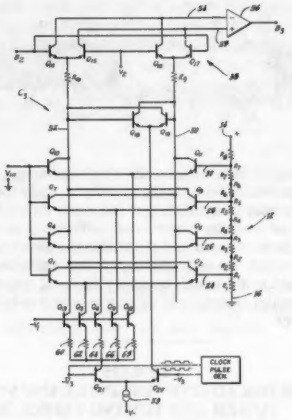
1. An A-to-D converter comprising an electronic comparator for comparing an analog input signal with each of a number of discrete level reference signal inputs, said comparator having a one bit binary output, the value of which alternates as the analog signal increases to successively exceed said reference signal levels, said comparator comprising:

a pair of differential transistors associated with each reference input, the base of a reference transistor of each pair being connected to the associated reference input and the base of an input transistor of each pair being connected to the analog input signal;

first common connector means for connecting the outputs of the reference transistors of a first set of transistor pairs associated with a first set of non-successive reference inputs in common with each other and with the outputs of the input transistors of a second set of transistor pairs associated with a second set of non-successive reference inputs;

second common connector means for connecting the outputs of the reference transistors of said second set of transistor pairs in common with each other and with the outputs of the input transistors of said first set of transistor pairs;

differential transistor bias means for drawing predetermined amounts of current through each of said pairs of differential transistors, the portions of said predetermined amounts of current drawn through each transistor of each



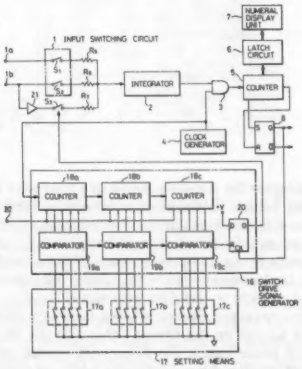
pair being determined by the level of said analog input signal relative to said associated reference input; and

means for detecting the amount of current drawn through said first common connector means relative to the current drawn through said second common connector means, whereby the relative currents through said connector means indicates said one bit binary output.

4,270,119
DUAL SLOPE SYSTEM A-D CONVERTER

Masakazu Mitamura, Gyoda, Japan, assignor to Takeda Riken Kogyo Kabushikikaisha, Tokyo, Japan

Filed Jul. 11, 1979, Ser. No. 56,630
Claims priority, application Japan, Jul. 14, 1978, 53-86511
Int. Cl.³ H03K *13/20*
U.S. Cl. 340—347 NT **11 Claims**



1. In an A-D converter having a first switch which is turned on to connect therethrough an analog input voltage which is applied to an integrator for a predetermined period of time to perform first integration of the analog input voltage, having a second switch which is turned on to connect a reference voltage opposite in polarity to the analog input voltage which is

applied to the integrator to perform second integration of the reference voltage until the output from the integrator becomes equal to the output at the start of the first integration, wherein the second integration period is converted into an output digital value, the improvement comprising:

setting means for setting a set digital value corresponding to a constant;

switch drive signal generating means, operatively connected to said setting means, for receiving the set digital value set by the setting means and for generating a switch drive signal having a time width corresponding to the set digital value; and

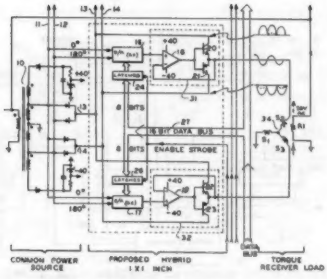
switching means, operatively connected to said switch drive signal generating means, for connecting the inverted polarity reference voltage to the integrator, for receiving the switch drive signal and for providing the inverted polarity reference to the integrator in dependence upon the switch drive signal, the inverted polarity reference voltage being provided to the integrator prior to the second integration.

4,270,120

SOLID STATE SYNCHRO TORQUE RECEIVER DRIVER

Robert S. Prill, Parsippany, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Jul. 18, 1979, Ser. No. 58,696
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 SY **3 Claims**



1. A solid state synchro torque receiver driver comprising:

a source of data bits,

a latching circuit connected to said source of data bits,

transformer means providing raw AC voltages at 0° and 180° phase differences, said transformer means including a plurality of rectifying diodes,

converter means for converting said AC voltage into ratiometric signals, said converter means including a digital to analog converter having 0° and 180° phase output signals controlled by said latching circuit,

output circuit means connected to said 0° and 180° phase AC voltage, said output circuit means including a push pull amplifier, and

comparing means for comparing the outputs of said output circuit means and said converting means for deriving an error signal indicative of the amplitude difference between said output circuit means and the output of said converting means, said comparing means continuously nulling said error signal so that said output circuit means follows the output of said converting means, said comparing means including a feedback amplifier connected to the output of said digital to analog converter and to the output of said circuit output means whereby said feedback amplifier generates an error signal indicative of any change in the amplitude relationship between the output of said digital to analog converter and said output circuit means, and

a synchro having first and second windings and having a rotor winding, said first stator winding being connected to ground, said rotor winding being excited by the same AC phase as said transformer, said push-pull amplifier being connected to said second stator winding so that the rotor phase shift of said synchro approximates the phase angle of said input signal and so that the amplifier output partially powers the synchro output, wherein

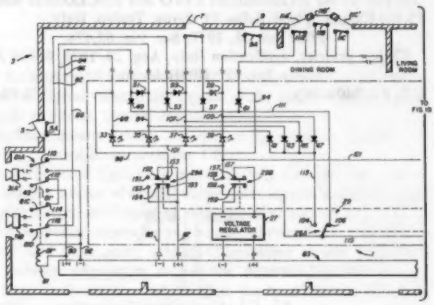
said push-pull amplifier includes an NPN output transistor and a PNP output transistor, each said output transistor having a collector line connected to said plurality of rectifying diodes.

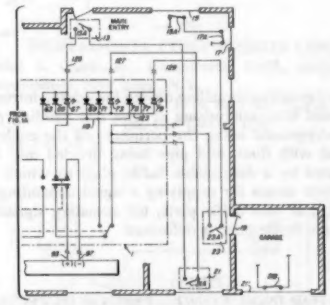
4,270,121

CIRCUITRY FOR BURGLAR ALARM ANNUNCIATOR

Raymond E. Verr, 6614 S. Dorsey La., Tempe, Ariz. 85283

Filed Apr. 10, 1980, Ser. No. 138,889
Int. Cl.³ G08B *29/00*
U.S. Cl. 340—514 **9 Claims**





9. An annunciator circuit for displaying information identifying individual closed access switches in an open loop burglar alarm system, the burglar alarm system including:

(i) first and second access switches each having a first terminal and a second terminal, said first and second access switches being normally open access switches, and

(ii) a sensing unit having first and second terminals thereof,

said annunciator circuit comprising in combination:

a. a first display element having first and second terminals, and first means for coupling the second terminal of said first display element to the first terminal of said first access switch;

b. a second display element having first and second terminals and second means for coupling the second display element to the first terminal of said second access switch;

c. a voltage source having first and second terminals, the voltage on the first terminal of said voltage source being greater than the voltage on the second terminal thereof by a predetermined voltage difference;

d. first switching means for selectively coupling the first

terminals of said first and second access switches to the first terminal of said sensing unit and for selectively coupling the second terminals of said first and second access switches to the second terminal of said sensing unit;

e. a first diode having an anode and a cathode coupled to the second and first terminals, respectively, of said first access switch;

f. second switching means for selectively coupling the first terminal of said voltage source to the first terminals of said first and second display elements when said first and second terminals of said sensing unit are not coupled to said first and second terminals of said first and second access switches, respectively.

4,270,122

PRESSURE-SENSITIVE SIGNALLING DEVICE FOR DETECTING INTRUSION INTO AN ENCLOSED AREA

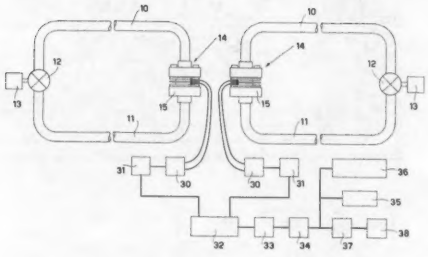
Pietro Capula, Via Arduino 91, Ivrea, Torino, Italy

Filed Jul. 31, 1979, Ser. No. 62,474

Claims priority, application Italy, Aug. 24, 1978, 68965 A/78

Int. Cl.³ G08B *13/10*

U.S. Cl. 340—566 **8 Claims**



1. A pressure sensitive signalling device for sensing intrusion into an enclosed area, comprising at least one yeilding pipe embedded underground along the periphery of the enclosed area and filled with fluid, said pipe being divided into two separate sections by a deformable baffle plate to which are connected sensor means for supplying a signal depending on the deformation of said baffle plate, for actuating signalling means when said baffle plate is deformed.

4,270,123

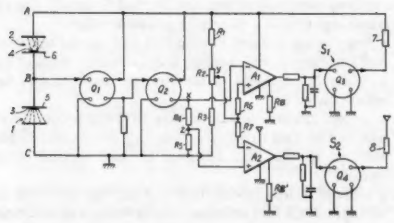
DETECTOR FOR INDICATING A FIRE OR DETECTOR MALFUNCTION

Jean-Claude Collard, Brussels, Belgium, assignor to Universal Det, S.A.R.L., Boulogne, France

Filed Feb. 26, 1979, Ser. No. 15,052

Int. Cl.³ G08B *17/10*

U.S. Cl. 340—629 **13 Claims**



1. A detector for a predetermined condition such as a rise in temperature or the presence of radiation or combustion gas comprising a reference element and an analysis element whose impedance varies as a function of said predetermined condition connected together as two arms of a Wheatstone bridge whose other two arms are constituted by resistors, a measuring diagonal of the bridge being connected to a pair of voltage comparators for respectively triggering warning systems, each of the comparators having input terminals of opposite polarity and an output terminal that produces a control signal when the voltage on the positive input terminal exceeds the voltage on the negative input terminal, the improvement comprising: connecting one end of the measuring diagonal to respective input terminals of opposite polarity of the comparators, connecting the other end of the measuring diagonal to the other input terminal of a first of the comparators and to the other input terminal of a second of the comparators whereby control signals produced by the first and second comparators, in response to unbalancing of the bridge, trigger respective warning systems that indicate the existence of a fault and the existence of said predetermined condition.

4,270,124

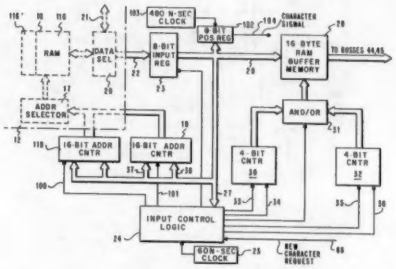
ALPHANUMERIC CRT DISPLAY SYSTEM WITH UNITARY CHARACTER FORMATION AND REFRESH

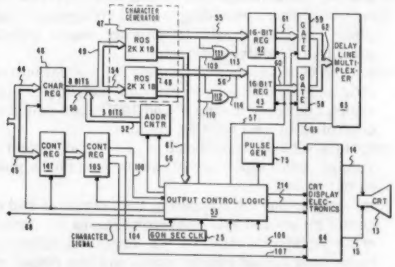
Charles R. Bringol, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 8, 1979, Ser. No. 46,877

Int. Cl.³ G06F *3/14*

U.S. Cl. 340—731 **5 Claims**





1. A cathode ray tube display system for displaying a block comprising a plurality of alphanumeric characters arranged in a plurality of character lines having cyclic refresh means wherein each whole character is refreshed before the next succeeding character is refreshed comprising:

means for continuous repetitive raster scanning of the cathode ray tube in a raster of horizontal passes, each traversing a whole one of said character lines, and

each of said passes comprising a continuous subraster of vertical scan lines wherein each character position in said character line being traversed is scanned by a group of said vertical scan lines, and

means for modulating the light intensity along the vertical scan lines of each of said groups to selectively provide an alphanumeric character at the position being scanned by said group,

said alphanumeric characters having varying widths and said groups having a variable number of scan lines dependent on the width of the alphanumeric character to be formed from the group.

4,270,125

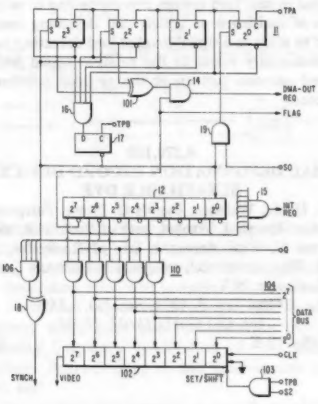
DISPLAY SYSTEM

Joseph A. Weisbecker, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 13, 1976, Ser. No. 722,584

Int. Cl.³ G06F *3/153*

U.S. Cl. 340—744 **2 Claims**



1. A system for displaying a pattern on a raster scanned display device by mapping bits from a display location in a memory associated with a computer onto the raster as contrasting spots depending on the value of each bit, wherein said computer is responsive to a direct memory access request to produce on a data bus, data signals retrieved from said memory at a location specified by a pointer address register, comprising the combination of:

clock means for producing timing signals;

output means for coupling signals to said display device;

means, including interval timing means, responsive to said timing signals, for producing horizontal synchronizing signals and applying them to said output means;

line counter means responsive to said horizontal synchronizing signals for producing output signals identifying individual horizontal lines;

first decoder means responsive to said interval timing means and to said line counter means for supplying direct memory access requests to said computer;

second decoder means responsive to said line counter means for supplying vertical synchronization signals to said output means;

means for storing data signals from said data bus in response to a signal derived from said timing signals when said computer responds to a direct memory access request and for shifting said data serially to said output means in response to said timing signals; and

a plurality of gating means, responsive to a command signal, for coupling the output signals from the line counter means to the data bus means.

4,270,126

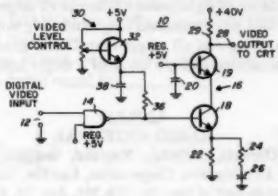
VIDEO AMPLIFIER ARRANGEMENT WITH WIDEBAND D-C GAIN CONTROL

Michael P. Bafaro, Park Ridge, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 19, 1979, Ser. No. 86,548

Int. Cl.³ G08B *5/36*

U.S. Cl. 340—748 **5 Claims**



1. An improved video amplifier arrangement for applying a source of digital video pulse signals to the control element of a cathode ray tube, comprising in combination:

amplifier means having an input and an output coupled to the control element of the CRT;

open-collector logic gate means having an input for receiving the source of digital video pulse signals and an output coupled to said input of said amplifier means; and

D-C amplifier means having an output coupled to the output of said logic gate, said D-C amplifier means including variable adjustable means for determining the output current therefrom and, in turn, the load current through said logic gate means.

4,270,127

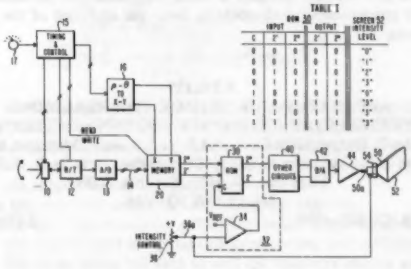
DIGITAL DATA COMPRESSION CIRCUIT

Charles A. Clark, Jr., Chatsworth, Calif., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 27, 1979, Ser. No. 52,416

Int. Cl.³ G01S *13/95*

U.S. Cl. 343—5 W **4 Claims**



1. In a radar system of the type including means for receiving echo signals from targets in a searched space and means for producing from the received echo signals, digitally formated data representative of the searched space, the improvement comprising:

multiple state conversion means responsive to a control signal for determining the state thereof and including circuit means and display means for converting said digitally formated data into different visible light patterns in accordance with the state of said conversion means; and

settable means producing a signal the value of which determines the overall intensity of said visible light patterns, said settable means also providing said control signal for

determining the state of said conversion means depending on the setting of said settable means;

said conversion means, when in a first state, converting said data into a light pattern wherein all target magnitudes below a predetermined magnitude M_L are represented as dark areas and all target magnitudes greater than M_L are represented as light areas of varying intensities corresponding to a parameter of said targets;

said conversion means, when in a second state, converting said data into a light pattern wherein all target magnitudes below said predetermined magnitude M_L are represented as dark areas and all target magnitudes greater than M_L are represented as light areas of a single intensity.

4,270,128

RADIO ANTENNAE

Robert J. Drewett, Swindon, England, assignor to National Research Development Corporation, London, England

Continuation-in-part of Ser. No. 808,384, Jun. 20, 1977, Pat. No. 4,160,979. This application Apr. 4, 1979, Ser. No. 27,284

Claims priority, application United Kingdom, Jun. 21, 1976, 25727/76; Apr. 1, 1977, 13928/77

Int. Cl.³ H01Q *1/36*

U.S. Cl. 343—702 **9 Claims**

1. An end fed radio antenna comprising first and second extended conductors each having an electrical length of one quarter of the design wavelength and each disposed in helical, insulated windings being of opposite chirality, wherein the conductors are mutually coaxial and longitudinally co-extensive and wherein one pair of adjacent ends of the conductors are connected to each other to form the end feed of the antenna.

4,270,129

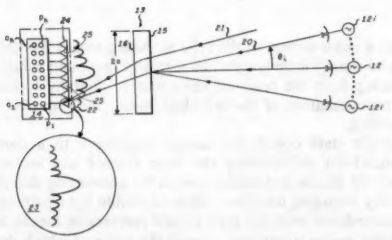
APPARATUS AND METHOD FOR REALIZING PRESELECTED FREE SPACE ANTENNA PATTERNS

John C. Herper, Glen Cove, and John J. Stangel, Mahopac, both of N.Y., assignors to Sperry Corporation, New York, N.Y.

Filed Jan. 30, 1979, Ser. No. 7,759

Int. Cl.³ H01Q *1/28*

U.S. Cl. 343—703 **2 Claims**



1. A method of achieving a desired far field pattern for an antenna having a focal region and a feed system with a feed antenna aperture in the focal region comprising the steps of:

positioning elements of said feed antenna at selected focal sectors of said focal region each of which correspond to a plane wave incident to the aperture of said antenna from a selected angular position such that sin θ_n is substantially equal to

$$\frac{2n-1}{2}\lambda/D$$

where θ_n in said angular position, n is an integer, λ is the operating wavelength of said antenna, and D the aperture dimension of said antenna;

locating detecting means in the far field of said antenna;

rotating said antenna such that said detecting means is angularly positioned relative to said antenna at one of said selected angular positions; ;p1 detecting radiation from said antenna at said detecting means; and

adjusting the phase and amplitude of the excitation from the element in said feed system corresponding to said selected angle of incidence at which said detecting means is located to achieve a signal level at said detecting means that is substantially equal to the relative signal level of the desired antenna pattern at the angular position of said detector.

4,270,130

THERMAL DEFORMATION RECORD DEVICE WITH BLEACHABLE DYE

Conrad G. Houle, Webster; Dennis G. Howe, Fairport; Harold T. Thomas; Joseph J. Wrobel, both of Rochester, all of N.Y., and Bruce G. Fike, deceased, late of Rochester, N.Y. (by Joyce A. Fike, executrix), assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 8, 1979, Ser. No. 1,519

Int. Cl.³ G01D *15/02, 15/34*

U.S. Cl. 346—77 E **32 Claims**

1. In a record device comprising a support having superposed thereon a layer of thermal recording material that contains information recorded in the form of a deformation pattern, said thermal recording material in a first state being absorbant to radiation of a selected wavelength for recording of said deformation pattern by exposure to radiation, the improvement wherein said thermal recording material has been converted to a second state wherein it is significantly less absorbant to said exposing radiation.

4,270,131

ADAPTIVE ERROR CORRECTION DEVICE FOR A LASER SCANNER

E. Neal Tompkins, 12847 Castle Bend, San Antonio, Tex. 78230, and Henry M. Donzis, 4918 Brandeis, San Antonio, Tex. 78249

Filed Nov. 23, 1979, Ser. No. 96,624

Int. Cl.³ G01D *15/14*

U.S. Cl. 346—108 **12 Claims**

1. A dynamic error correction device for a laser scanner having at least a laser for generating a laser beam, a multiple facet spinner, and an acoustooptic modulator, comprising:

photodetector means having a mask for generating stepped voltage waveform output upon said laser beam sweeping thereacross;

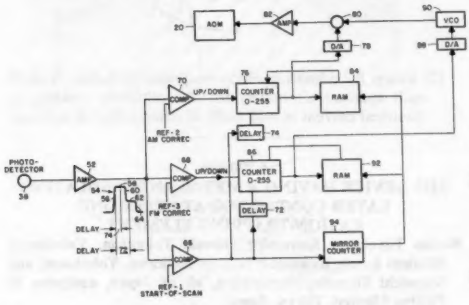
comparator means:

(1) receiving said stepped output to give start-of-scan signal;

(2) receiving said stepped output to give an intensity correction signal after a first predetermined delay from said start-of-scan signal;

(3) receiving said stepped output to give a facet-to-axis correction signal after a second predetermined delay from said start-of-scan signal;

memory means for storing previous amplitude and frequency modulation requirements for each facet of said multiple facet spinner;



first correction means receiving said previously stored amplitude modulation and incrementally increasing or decreasing amplitude modulation of said acoutooptic modulator depending upon said intensity correction signal;

second correction means receiving said previously stored frequency modulation and incrementally increasing or decreasing frequency modulation of said acoustooptic modulator depending upon said facet-to-axis correction signal; and

means for updating said memory means from said first correction means and said second correction means.

4,270,132

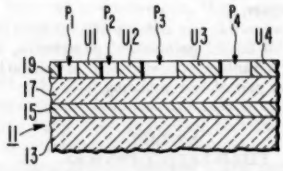
INFORMATION RECORD

Alan E. Bell, East Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 782,035, Mar. 28, 1977, abandoned. This application Apr. 12, 1979, Ser. No. 29,217

Int. Cl.³ G01D *15/34*

U.S. Cl. 346—135.1 **7 Claims**



1. A record blank for use in optical recording and playback with a light beam having a given light frequency corresponding to a wavelength, λ, within a given portion of the light spectrum, said record blank comprising, in combination:

a substrate;

a first layer of material exhibiting high reflectivity over at least said given portion of the light spectrum, said first layer overlying a surface of said substrate;

a second layer of material exhibiting light transparency over at least said given portion of the light spectrum and having a refractive index, n_D, said second layer overlying said first layer; and

a third layer of material exhibiting high reflectivity over at least said given portion of the light spectrum, high absorptivity to light at said given frequency, and substantial opacity to light at said given frequency, said third layer having a thickness d_1 overlying said second layer;

said first layer effecting a phase shift δ_2 to light reflected from the interface between said first layer and said second layer and said third layer effecting a phase shift δ_1 to light reflected therefrom;

the thickness of said second layer in the units of the wavelength λ, being equal to:

$$\frac{\lambda}{360(2n_D)}\left[\delta_2 - \delta_1 - 360\left(\frac{2d_1}{\lambda}\right) + 180\right]$$

4,270,133

INK SUPPLY DEVICE FOR AN INK JET PRINTER

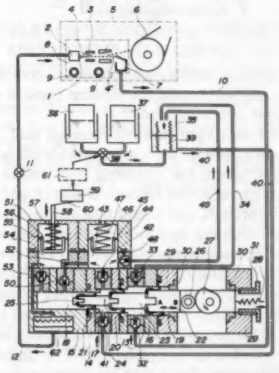
Yoichi Shimazawa, and Toshiaki Kawamoto, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 27, 1979, Ser. No. 52,603

Claims priority, application Japan, Jun. 29, 1978, 53-79863

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **22 Claims**



1. An ink supply device for an ink jet printer which emits ink drops from a nozzle toward a recording sheet, selectively deflects said ink drops by a deflection means, and prints desired symbols on said recording sheet with said deflected ink drops, said ink supply device comprising:

an ink reservoir means for containing ink therein;

an ink collector means for collecting the ink drops which are not contributive to the recording purposes, said collected ink drops being fed back to said ink reservoir means; and

a constant flow rate pump means connected to said ink reservoir means and said ink collector means for feeding the ink collected by said collector means back to said ink reservoir means for recirculation of ink, said constant flow rate pump being adapted to supply ink drawn from the ink reservoir which includes the collected ink into a pressure chamber and force the ink out through an exhaust port at a constant flow rate, said constant flow rate pump including at least one operatively connected pressure accumulator means, said pressure accumulator means including a pressure sensing means operatively connected thereto for sensing variations in the ink pressure caused by variations in the viscosity of the ink; and

an ink supply means and an ink solvent supply means being in communication with a valve means operatively con-

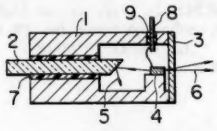
nected to said pressure sensing means and to said ink reservoir means wherein said valve means supplies ink from said ink supply means to said ink reservoir means during normal operating conditions and said valve means supplies an ink solvent from said ink solvent supply means to said ink reservoir means when the pressure sensing means senses an ink pressure above a predetermined pressure.

4,270,134

LIGHT-EMITTING SEMICONDUCTOR DEVICE

Yutaka Takeda, Ohme; Kunio Aiki, and Ryoichi Ito, both of Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 30, 1979, Ser. No. 34,263
Claims priority, application Japan, Apr. 28, 1978, 53-49829
Int. Cl.³ H01L *31/12, 33/00*
U.S. Cl. 357—19 **10 Claims**



1. A light-emitting semiconductor device, comprising:

a light-emitting semiconductor element capable of emitting light in two directions; and

a housing for said light-emitting element, said housing including a heat sink for the semiconductor element, a monitoring light guide for receiving and transmitting light from said light-emitting element in one of said two directions therethrough, and a light take-out means for receiving and transmitting light from the light-emitting element out of the housing in the other of said two directions,

wherein said monitoring light guide has a light-receiving face located adjacent said light-emitting element for receiving light therefrom in said one direction, at least part of which light-receiving face is substantially inclined in a direction relative to the optical axis of the light emitted in said one direction from said semiconductor element so that light reflected from the inclined part of said light-receiving face will be directed in a direction different than that of said other direction of light emitted by the light-emitting element so as not to interfere with said light emitted in said other direction.

4,270,135

HIGH-FREQUENCY PHOTOTRANSISTOR OPERATED WITH MULTIPLE LIGHT SOURCES

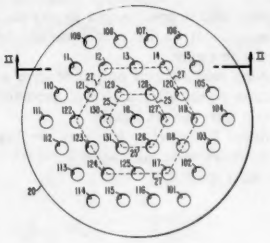
Earl S. Schlegel, Plum Borough, and Maurice H. Hanes, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 13, 1979, Ser. No. 103,129
Int. Cl.³ H01L *31/12*
U.S. Cl. 357—19 **9 Claims**

1. A photo-responsive semiconductor device comprising:

(1) a body of semiconductor material;

(2) a first electrode disposed on said body of semiconductor material, said first electrode having two apertures therein; and



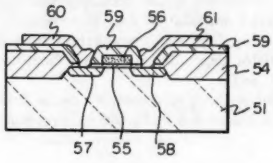
(3) means for admitting electromagnetic radiation through each aperture alternately for intermittently creating an electrical current in said body of semiconductor material.

4,270,136

MIS DEVICE HAVING A METAL AND INSULATING LAYER CONTAINING AT LEAST ONE CATION-TRAPPING ELEMENT

Nobuo Toyokura, Kawasaki; Hiroshi Tokunaga, Yokohama; Shinichi Inoue, Kawasaki; Hajime Ishikawa, Yokohama, and Masaichi Shinoda, Sagamihara, all of Japan, assignors to Fujitsu Limited, Tokyo, Japan

Filed Mar. 23, 1979, Ser. No. 23,460
Claims priority, application Japan, Mar. 25, 1978, 53/34529; Jun. 7, 1978, 53/68513
Int. Cl.³ H01L *29/78, 29/34, 23/48*
U.S. Cl. 357—23 **6 Claims**



1. A metal-insulator-semiconductor type semiconductor device comprising:

a semiconductor substrate,

an insulating layer convering a surface of said semiconductor substrate,

a metal layer comprising at least one metal element selected from the group consisting of tungsten, molybdenum, titanium, tantalum, niobium, hafnium and iron formed on said insulating layer, and

at least one cation-trapping element selected from the group consisting of boron, germanium, phosphorus, lead, tin, chromium and antimony comprised in said metal layer and in the upper part of said insulating layer.

4,270,137

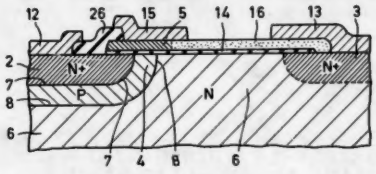
FIELD-EFFECT DEVICES

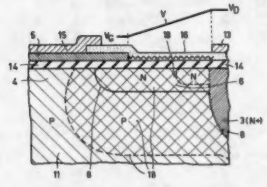
David J. Coe, Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 15, 1978, Ser. No. 970,033
Claims priority, application United Kingdom, Dec. 15, 1977, 52209/77; Sep. 8, 1978, 36153/78
Int. Cl.³ H01L *29/78, 29/40, 27/02*
U.S. Cl. 357—53 **10 Claims**

1. A field-effect device comprising a semiconductor body in which a channel area of the device is present, a drain zone present in the body and situated adjacent the channel area, a drain electrode electrically connected to the drain zone, a gate

situated over and separated from the channel area by a barrier layer, a gate connection for biasing the gate independently of the drain electrode to control by field-effect action across the barrier layer the passage of charge-carriers along a current path through said channel area, and field-relief means connected to said gate and extending above the drain zone towards said drain electrode, said drain zone having a sufficiently low doping that during operation of the device said field-relief means serve to spread the electrostatic field which occurs in





this low-doped drain zone and to reduce at the body surface the magnitude of said field at the edge of said low-doped drain zone adjacent the channel area, characterized in that said field-relief means comprise a resistance layer which extends over the low-doped drain zone and is electrically connected between the gate and drain electrode free of a source electrode to permit during operation of the device the formation of a potential distribution along the resistance layer between the gate and drain electrode and over the current path in the underlying low-doped drain zone.

4,270,138

ENHANCED THERMAL TRANSFER PACKAGE FOR A SEMICONDUCTOR DEVICE

Richard J. Desmond, North Syracuse, N.Y., assignor to General Electric Company, Auburn, N.Y.

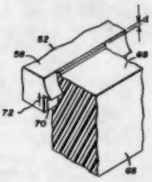
Filed Mar. 2, 1979, Ser. No. 17,032
Int. Cl.³ H01L *23/02, 39/02, 23/80*
U.S. Cl. 357—81 **7 Claims**

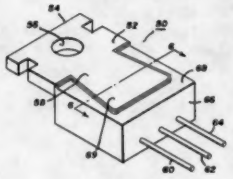
1. A semiconductor device manufacturable by molding of an encapsulating body onto an integral heat sink adapted for mounting to an external heat sink comprising:

a semiconductor element mounted in heat transfer relationship with said integral heat sink;

a peripheral burr on said integral heat sink extending away from said body for cooperating with a mold member during manufacture to keep a mounting surface of said body free from encapsulant;

an encapsulating body surrounding said semiconductor element and a portion of said integral heat sink and having a lower major surface spaced from a lower surface of said integral heat sink a distance sufficient to insure that said major surface of said encapsulating body does not interfere with an interface between said integral heat sink and an external heat sink and a narrow rim portion surrounding said burr for easy removal without removal of any substantial amount of material from said major surface.



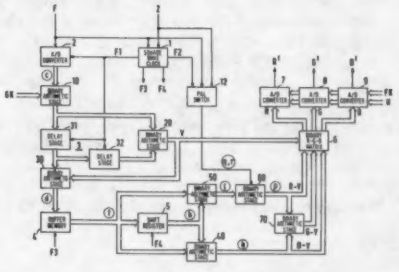


4,270,139

COLOR TELEVISION RECEIVER COMPRISING AT LEAST ONE INTEGRATED CIRCUIT FOR THE LUMINANCE SIGNAL AND THE CHROMINANCE SIGNALS

Peter M. Flamm, Freiburg, and Leslie Miskin, Gundelfingen, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Dec. 10, 1979, Ser. No. 101,657
Int. Cl.³ H04N *9/50*
U.S. Cl. 358—23 **8 Claims**



1. A color-television receiver, comprising:

at least one integrated circuit for separating and conditioning the luminance signal and the chrominance signals from the composite color signal, said integrated circuit including a chrominance-subcarrier oscillator, a chrominance-subcarrier band-pass filter, a synchronous demodulator, a PAL switch, a color matrix and an R-G-B matrix, said chrominance-subcarrier oscillator is a square-wave clock generator providing four clock signals, the first of which has four times the chrominance-subcarrier frequency, and the second to fourth of which have the chrominance-subcarrier frequency, with the first and second clock signals having a mark-to-space ratio of 0.5, and the third and fourth clock signals each consisting of two consecutive, T/2-long pulses separated by T/2 within each 4T-long period (T=period of the first clock signal);

an analog-to-digital converter clocked by the first clock signal, whose analog input is presented with the composite color signal, and which forms as its output signal a parallel binary word from the amplitude of the composite color signal at those instants where the respective amplitudes of the undemodulated chrominance signal are equal to the amplitudes of the respective color-difference signal;

a first binary arithmetic stage which multiplies the output signal of the analog-to-digital converter by a binary overall-contrast control signal;

a two-stage delay line which delays the output signal of the first binary arithmetic stage by T/2;

a second binary arithmetic stage which forms the arithmetic means of the delayed and undelayed output signals of the first binary arithmetic stage;

a third binary arithmetic stage which subtracts the output signal of the second binary arithmetic stage from the output signal of the first delay stage;

a buffer-memory arrangement which temporarily stores the output signal of the third binary arithmetic stage and whose enable input is fed with the third clock signal;

a shift-register arrangement consisting of n parallel shift registers (n=number of bits at the output of the third binary arithmetic stage) each of which provides a delay of one line period and whose serial inputs are connected to the parallel outputs of the buffer-memory arrangement while their clock inputs are fed with the fourth clock signal;

a fourth binary arithmetic stage which forms the arithmetic mean of the input and output signals of the shift-register arrangement;

a fifth binary arithmetic stage which subtracts the input signal of the shift-register arrangement from the output signal of this arrangement and then divides the difference obtained by two;

a sixth binary arithmetic stage which, controlled by the PAL switch, either leaves the output signal of the fifth binary arithmetic stage unchanged or forms its absolute value; and

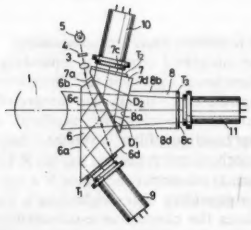
a seventh binary arithmetic stage which forms the green color-difference signal from the output signals of the fourth and sixth binary arithmetic stages, the outputs of the second, fourth, sixth and seventh binary arithmetic stages are connected to the binary R-G-B matrix, each of whose outputs is coupled to one of three digital-to-analog converters for deriving the analog signals for controlling the R-G-B values of the picture tube.

4,270,140

OPTICAL SYSTEM FOR IMPRINTING INFORMATION

Michiro Ohishi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1979, Ser. No. 51,287
Claims priority, application Japan, Jul. 10, 1978, 53-83836
Int. Cl.³ H04N 9/04
U.S. Cl. 358—55 **8 Claims**



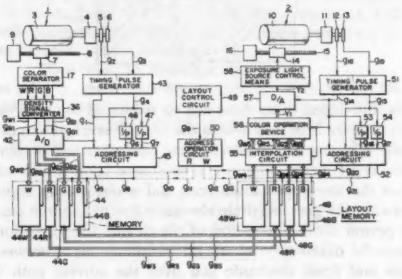
1. An optical system for a multiple image pick-up element type color television camera comprising; means forming an image of information indicia to be imprinted, a lens for projecting said image, said lens and said means forming an image of said information indicia arranged outside the path of light of a photographed image and in the vicinity of a color separation prism system, a separation prism system for said camera having at least one dichroic reflecting layer, means for applying the image of said information indicia to be imprinted as optical information to said color separation prism system, and an image pick-up element having an image forming surface; said optical information passing through said color separation prism system along an unreflected path to said image pick-up element and forming the image of said information on the image forming surface of said image pick-up element outside said color separation prism system.

4,270,141

METHOD AND MACHINE FOR REPRODUCING A COLOR PICTURE BY STORING SIGNAL STREAMS, ONE ENTIRELY, AND THE REST PARTIALLY

Takashi Sakamoto, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Jul. 23, 1979, Ser. No. 59,739
Claims priority, application Japan, Aug. 4, 1978, 53-94507
Int. Cl.³ H04N 1/46
U.S. Cl. 358—78 **16 Claims**



1. A method of reproducing a picture, which comprises:

(a) scanning a color original picture;

(b) generating an analog original picture signal;

(c) separating said analog picture signal into a plurality of n analog separation original picture signals;

(d) converting each of said n signals into a stream of digital separation original picture signals;

(e) storing all of one of said digital separation original picture signal streams in a memory;

(f) sampling each of the n−1 other digital separation original picture signal streams according to a regular pattern;

(g) storing said sampled n−1 signals in said memory;

(h) producing digital separation reproduction picture signal streams corresponding to said digital separation original picture signal streams;

(i) said producing comprising, in the case of the said one digital separation original picture signal stream, reading out said stored digital signal from said memory;

(j) said producing comprising, in the case of each of said n−1 other digital separation original picture signal streams, reading out said stored sampled digital separation original picture signals corresponding thereto from said memory;

(k) interpolating intermediate values between said stored sampled digital separation original picture signals;

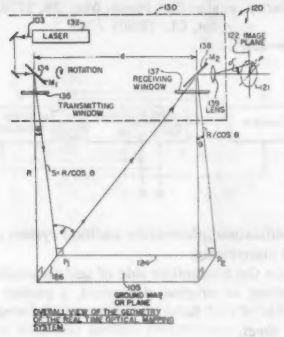
(l) converting said digital separation reproduction picture signal streams to analog form; and

(m) using said converted signals to produce a reproduction picture.

4,270,142
ADAPTIVE SLANT RANGE COMPENSATOR FOR A REMOTE OPTICAL MAPPING SYSTEM

Gerald R. Mackelburg; Howard B. McCracken, and Peter D. McCardell, all of San Diego, Calif., assignors to The United Statets of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 18, 1978, Ser. No. 970,584
Int. Cl.[3] H04N *7/18*
U.S. Cl. 358—99 **15 Claims**



OVERALL VIEW OF THE GEOMETRY OF THE REAL TIME OPTICAL MAPPING SYSTEM.

1. An optical system, to be used with a light source, for mapping objects located in an underwater environment, comprising:

a first optical means, adapted to receive light from the light source, for transmitting the light produced by the light source to the object area to be mapped, thereby illuminating the area; and

a second optical means comprising:

an input means, adapted to receive reflected light from the illuminated object area, or plane;

an output means for conformally transforming, that is, conformally mapping, images of all objects in the object plane to an image plane located externally of the second optical means: and

means, disposed between the second optical means and the image plane, for masking light propagating between the optical means and the image plane, the masking means having a circular configuration; and

means adapted to receive illumination from the transforming means, for compensating for the absorption losses of the light as a function of the range to various parts of the object area.

4,270,143
CROSS-CORRELATION VIDEO TRACKER AND METHOD

Edwin E. Morris, Clinton, N.Y., assignor to General Electric Company, Utica, N.Y.

Filed Dec. 20, 1978, Ser. No. 971,197
Int. Cl.[3] H04N *7/18*; G01S *13/00*
U.S. Cl. 358—125 **32 Claims**

1. A device for deriving a signal indicative of the direction and distance of movement between successive video frames, said device comprising:

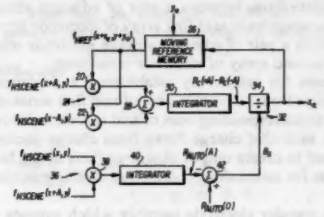
an input for receiving a video signal;

means for storing elements from a frame of the video signal to establish a reference;

means comparing elements from a subsequent frame of the video signal with the stored reference elements for generating a difference signal representing the difference between a pair of cross-correlation signals dependent on the correlations of the subsequent frame elements and the stored reference elements at two predetermined opposite relative shifts;

means for generating a gain control signal;

means responsive to the difference signal and to the gain control signal for generating an error signal indicative of



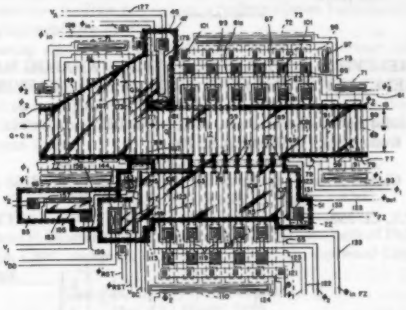
the amount of shift required to center the stored reference frame with respect to the subsequent frame; and

means for outputting the error signal.

4,270,144
CHARGE COUPLED DEVICE WITH HIGH SPEED INPUT AND OUTPUT

John M. Hartman, and Arthur L. Lancaster, both of Costa Mesa, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 657,516, Feb. 12, 1976, which is a continuation of Ser. No. 510,108, Sep. 27, 1974. This application Jun. 3, 1977, Ser. No. 803,109
Int. Cl.[3] G11C *19/28*; H01L *29/78*
U.S. Cl. 307—221 D **1 Claim**



1. In a charge-coupled device having a first linear array of electrode structures distributed over the surface of a semiconducting substrate to define, when energized, a first series of charge storage sites therein, means within said substrate defining a first charge-carrying channel within which said storage sites are distributed, and means for applying clocking signals to said electrode structures so as to step charge packets within said channel between successive ones of said storage sites, an improved readout station comprising:

(a) a second linear array of electrode structures distributed over the surface of said semiconductor substrate so as to define, when energized, a second series of charge storage sites, and means within said substrate defining a second charge carrying channel within which said second series of charge storage sites are distributed, said first and second linear arrays of electrode structures each including a series of spaced apart storage electrode members, each storage electrode member of said second series being aligned end to end with a corresponding storage electrode member of said first array;

(b) means for establishing individual connecting channels in said substrate between said first and second channels from

respective ones of said first series of storage sites to corresponding ones of said second series of storage sites, said means for establishing individual connecting channels comprising a series of doped partitions extending in said substrate from between a pair of adjacent storage electrode members in said first array of electrode structures to between a pair of adjacent storage electrode members in said second array of electrode structures;

(c) means for selectively establishing a depletion region gradient from respective ones of said first series of storage sites to corresponding ones of said second series of storage sites, such that charge flows from charge packets in the former to create output charge packets in the latter, said means for establishing a depletion region gradient including:

(1) a transfer electrode member which extends between the ends of respective pairs of aligned storage electrode members; and

(2) means for applying a voltage to said transfer electrode member between the ends of said aligned storage electrode members, the depth of the depletion region under said transfer electrode member being intermediate the depths of the depletion regions under respective members of said pairs of aligned electrodes; and

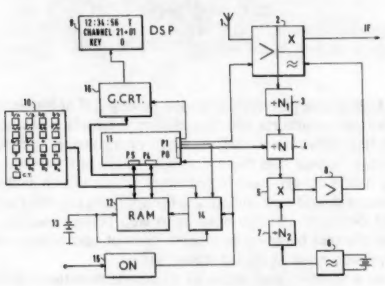
(d) means for applying clocking signals to said second array of electrode structures so as to step the output charge packets received in their associated storage sites in synchronism with the master charge packets from which they were derived, at such a rate as to cause continuing and cumulative transfer of charge from given charge packets in said first series of charge storage sites to their associated output charge packets in said second series of charge storage sites as the respective charge packet pairs pass through successive individually interconnected storage site pairs.

4,270,145

TELEVISION SET WHICH DISPLAYS ANALOG DATA RELEVANT TO THE OPERATION OF THE TELEVISION SET ON ITS VIDEO DISPLAY

Attilio Farina, Turin, Italy, assignor to Indesit Industria Elettrodomestici Italiana S.p.A., Italy

Filed May 17, 1979, Ser. No. 39,860
Claims priority, application Italy, May 22, 1978, 68163 A/78
Int. Cl.³ H04N *5/44, 5/50, 9/535*
U.S. Cl. 358—188 **11 Claims**



1. A television set, comprising:

a picture display device for displaying a video picture;

character generator means for generating signals representative of alphabetical, numerical and/or abstract characters;

said picture display device receiving said signals and displaying the alphabetical, numerical and/or abstract characters represented thereby; and

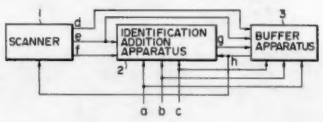
control means for determining the value of analog data, other than the tuning frequency of said television set, relating to the operation of said television set, and for causing said character generator means to generate signals representative of alphabetical, numerical and/or abstract characters which indicate said value of said analog data.

4,270,146

IDENTIFICATION INFORMATION ADDITION SYSTEM OF FACSIMILE APPARATUS

Eiichi Adachi, Atsugi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed May 18, 1979, Ser. No. 40,142
Claims priority, application Japan, May 25, 1978, 53-61691
Int. Cl.³ H06N *1/40*
U.S. Cl. 358—256 **6 Claims**



1. An identification information addition system of a facsimile apparatus comprising:

a scanner on the transmitter side of said facsimile apparatus for scanning an original document, a plotter on the receiver side of said facsimile apparatus for scanning a recording sheet,

an identification information bearing sheet on said transmitter side which bears an identification information at a predetermined position thereof,

a memory apparatus on said transmitter side,

a memory means for storing in a memory portion of said memory apparatus corresponding to a predetermined scanning portion of said scanner said identification information which is obtained with said identification information bearing sheet scanned by said scanner,

a pick-out means for picking out said identification information stored in said memory apparatus at said predetermined scanning position of said scanner when said original document is scanned by said scanner, and

an information displacement means for displacing part of an image information which is obtained by scanning said original document, with the identification information picked up; said plotter upon reception of the scanned information from said original document and said identification information printing the exact scanned information and identification information in the same location on said recording sheet as they appear on said original document.

4,270,147

APPARATUS FOR LIMITING FACSIMILE TRANSMISSION DURATIONS

James A. Logie, Orlando; T. James Bryan, Altamonte Springs, and Arthur G. Wilson, Maitland, all of Fla., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

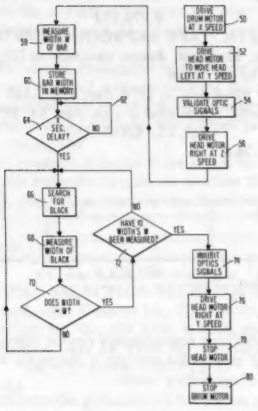
Filed Feb. 11, 1980, Ser. No. 120,490
Int. Cl.³ H04N *1/38*
U.S. Cl. 358—256 **10 Claims**

1. A method of controlling the duration of a facsimile transmission in response to the dimension of a document being transmitted from a facsimile apparatus including document support means having a predetermined dark/light surface pattern, sensor means in communication with said surface pattern and/or said document, means for scanning said sensor means relative to said support means and facsimile transmission means coupled to said sensor means for generating transmission signals representing dark/light variations on said document, said method comprising the following steps:

placing a document on said scanning means so as to expose at least a portion of said patterns;

scanning said sensor means relative to said support means;

transmitting facsimile signals representing dark/light variations on said document when said sensor means is in communication with said document;



detecting said pattern when said sensor means is in communication with said surface pattern; and

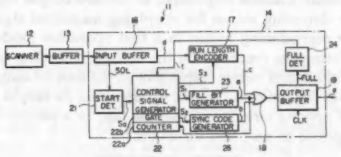
terminating said transmitting in response to said detecting.

4,270,148

FACSIMILE TRANSMISSION APPARATUS

Eiichi Adachi, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 11, 1979, Ser. No. 56,568
Claims priority, application Japan, Jul. 18, 1978, 53-86721
Int. Cl.³ H04N 7/12
U.S. Cl. 358—260 **4 Claims**



1. A facsimile transmission apparatus including scanning means, compression means, input buffer means for storing two lines of data from the scanning means in such a manner as to feed out one line while storing a next line and output buffer memory means having a predetermined capacity for intermittently storing compressed data from the compression means while continuously feeding out the compressed data, characterized by comprising:

start detector means for detecting completion of storing a line of data in the input buffer means and producing a start signal in response thereto;

full detector means for detecting a full condition of the output buffer means and producing a full signal in response thereto;

fill bit generator means;

sync signal generator means; and

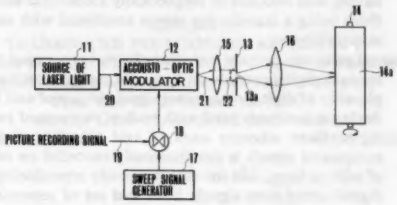
control means for controlling, in response to the start signal, the fill bit generator means to feed fill bits to the output buffer means until the full signal is generated, then controlling the sync signal generator means to feed the sync signal to the output buffer means and then controlling the compression means to feed compressed data to the output buffer means.

4,270,149

LASER BEAM FACSIMILE APPARATUS

Yoshinori Ohta; Keiichi Kubota, and Mitsuhito Sakaguchi, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Aug. 20, 1979, Ser. No. 67,788
Claims priority, application Japan, Aug. 21, 1978, 53-102062
Int. Cl.³ H04N 1/04
U.S. Cl. 358—293 **3 Claims**



1. A laser beam facsimile apparatus comprising:

a laser light source;

an accousto-optic modulator cell disposed on the exit side of said laser light source for deflecting a laser beam emitted from said laser light source in a sub-scanning direction;

an optical system disposed on the exit side of said accousto-optic modulator cell for collimating said laser light beam;

a slit disposed on the exit side of said optical system and having an aperture larger than the diameter of the light beam deflected by said modulator cell in a predetermined direction;

an optical system for focusing a light beam passed through said aperture on a photosensitive medium;

means for scanning said deflected light beam on said photosensitive medium to produce a pattern of scan lines on said photosensitive medium;

a sweep signal generator connected to said modulator cell for scanning a light beam across said slit so that the deflected light beam runs over said aperture; and

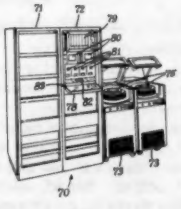
said sweep signal having a frequency sufficiently higher than the maximum frequency of a signal for producing said scan lines.

4,270,150

VIDEO FRAME STORAGE RECORDING AND REPRODUCING APPARATUS

Joachim P. Diermann, and Thomas W. Ritchey, Jr., both of Palo Alto, Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Jan. 28, 1977, Ser. No. 763,371
Int. Cl.³ H04N 5/79
U.S. Cl. 360—10 **25 Claims**



1. Apparatus for simultaneously recording on magnetic media a plurality of digital component signals, which comprise the digital component signals of an analog information signal, and for later simultaneously reproducing said component signals therefrom, said apparatus being adapted for use in a television studio which has a station reference video information signal source comprising:

disc drive means for holding and rotatably driving a remov-

able disc means at a constant predetermined rotational speed;

said disc drive means including carriage means carrying a plurality of transducing means for recording on and reproducing from one of two sets of recording surfaces, each set having a plurality of said surfaces, a transducing means being provided for each of said surfaces;

disc means removably mounted upon said disc drive means and having a plurality of substantially flat, circular discs having said two sets of magnetically recordable surfaces, there being a transducing means associated with each of said surfaces;

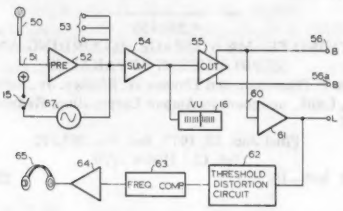
signal processing means including channel processing means for each digital component signal for applying each of said plurality of digital component signals to one of said transducing means associated with each of two sets of recording surfaces whereby each of said plurality of digital component signals is simultaneously recorded on one set of said surfaces, and for simultaneously reproducing said digital component signals from said set of separate surfaces and aligning the component signals so that they can be combined to reconstruct the information signal, said signal processing means including means for synchronizing all of said channel processing means to said information signal during recording and to said separate reference video information signal during reproducing; and,

control means for controlling the operation of said disc drive means and said signal processing means, said control means including at least one operator control panel having a plurality of control keys thereon for controlling the selective recording and reproducing by said apparatus.

4,270,151
MICROPHONE MIXER WITH PREDISTORTION INDICATION

Dieter Steinmaier, 12231 Roscoe Blvd., Sun Valley, Calif. 91352

Filed Oct. 10, 1978, Ser. No. 950,234
Int. Cl.[3] G11B *27/36*
U.S. Cl. 360—31 **4 Claims**



1. A control circuit for minimizing distortion in a recorded or reproduced audio signal comprising:

means defining a signal channel including input terminals for receiving an audio signal to be recorded or reproduced and output terminals therefor,

said signal channel defining means including a preamplifier for audio input signals and an output stage for producing an output of audio signals to said output terminals;

means defining a control channel coupled to said signal channel including means for continuously monitoring said audio signal,

said control channel including a distortion circuit for selectively introducing distortion into the monitored audio signal in said control channel,

audio output means for use by the user of the equipment connected to the output of said distortion circuit,

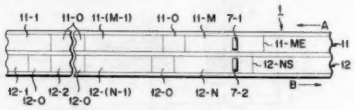
said distortion circuit having a predetermined threshold below which input signals thereto pass virtually undistorted and above which are audibly distorted simulating distortion in the audio signal if recorded or reproduced under present conditions,

said threshold corresponding to a fixed level differential with respect to the distortion level of said signal channel.

4,270,152
MAGNETIC TAPE REPRODUCTION DEVICE

Masatoshi Ida, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 5, 1979, Ser. No. 1,189
Claims priority, application Japan, Jan. 13, 1978, 53-3189
Int. Cl.[3] G11B *15/12*
U.S. Cl. 360—74.4 **7 Claims**



1. A magnetic tape reproduction device comprising:

tape driving means for driving a magnetic tape having a plurality of recording tracks,

reproducing means for reproducing information recorded in the magnetic tape,

detecting means which produces a first output signal when having detected that an output signal corresponding to a non-signal region of a first recording tract of the tape continues to be produced for a specified period of time from said reproducing means while the tape is driven in first direction for signals recorded on the first track to be reproduced by said reproducing means, and which produces a second output signal when having detected that an output signal corresponding to a non-signal region of a second track of the tape continues to be produced for a specified period of time from said reproducing means while the tape is driven in said first direction.

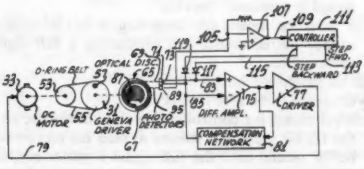
first control means responsive to the first output signal from the detecting means for supplying an output signal to set the reproducing means in a first operation mode to pick information recorded on the second recording track, and

second control means responsive to the second output signal from the detecting means for applying its output signal to the driving circuit to drive the tape in a second direction opposite to said first direction.

4,270,153
OPTICAL CONTROL SYSTEM FOR TRANSDUCER POSITIONING APPARATUS

Abraham Bejerano, Costa Mesa; George J. Bennett, Huntington Beach, and Harold E. Arns, Chino, all of Calif., assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed Jun. 28, 1979, Ser. No. 52,738
Int. Cl.[3] G11B *21/08*
U.S. Cl. 360—78 **16 Claims**



1. An optical control system for use with apparatus having rotatable means for positioning a transducer head in a pre-

scribed relationship relative to a selected track on a recording medium, said system comprising:

an optical disc coupled to said rotatable means and rotatably movable in correspondence therewith, said optical disc having a track for transmitting a beam of light in accordance with the angular position of the disc;

means for directing a beam of light at the track of said optical disc;

photodetector means, responsive to the beam of light transmitted by the track of said optical disc, for producing an error signal indicative of the angular position of said optical disc and, correspondingly, the angular position of said rotatable means; and

motor means responsive to the error signal for controllably rotating said rotatable means, to position the transducer head in the prescribed relationship relative to the selected track.

4,270,154

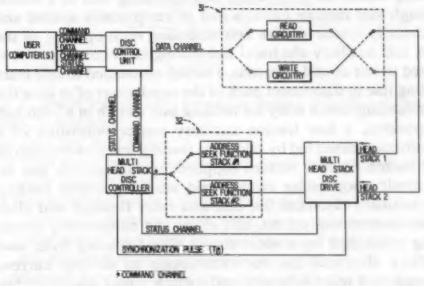
HEAD SELECTION TECHNIQUE

John E. Crawford, 4805 Coopers La., Hyattsville, Md. 20784

Continuation of Ser. No. 882,324, Mar. 1, 1978, abandoned. This application May 24, 1979, Ser. No. 42,201

Int. Cl.³ G11B *5/012, 15/12*

U.S. Cl. 360—98 **6 Claims**



1. In a magnetic disc imformation storage system in which a plurality of concentric information tracks on a rotating magnetic disc storage unit are each accessible by at least two radially movable magnetic read/write heads circumferentially spaced from one another, a method for selecting one of said at least two magnetic heads to perform a read or write operation on a predetermined sector of a predetermined information track in response to a command signal, comprising the steps of:

(a) determining a candidate magnetic head in response to the instantaneous position of the predetermined sector relative to the magnetic heads;

(b) calculating the time it will take the candidate head to traverse from its instantaneous radial position to the radial position of the predetermined information track;

(c) selecting the candidate head as the magnetic head to perform the read or write operation if the candidate head is capable of reaching the radial position of the predetermined information track prior to the time the predetermined sector passes the candidate head on the first revolution of the storage disc after receipt of the command signal;

(d) selecting another magnetic head as the head to perform the read or write operation if said other head is capable of reaching the radial position of the predetermined information track prior to the time said predetermined sector passes the other head on the first revolution of the storage disc and if the candidate head cannot reach the predetermined information track prior to the time the predetermined sector passes the candidate head on the first revolution of the storage disc; and

(e) selecting the magnetic head which is first able to reach the radial position of the predetermined information track prior to the time the predetermined sector passes it on a subsequent rotation of the storage disc as the head to perform the read or write operation if neither magnetic head is capable of reaching the radial position of the predetermined information track on the first revolution of the storage disc.

4,270,155

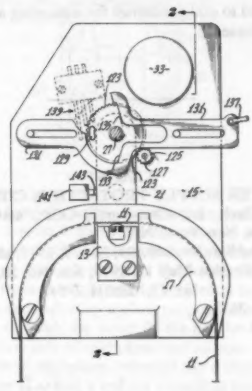
TRANSDUCER POSITIONING APPARATUS

Abraham Bejerano, Costa Mesa, Calif., assignor to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed Jun. 28, 1979, Ser. No. 52,739

Int. Cl.³ G11B *21/08, 21/12, 21/24, 5/56*

U.S. Cl. 360—106 **9 Claims**



1. Apparatus for positioning a transducer head in a prescribed relationship relative to a selected track on a recording medium such that information can be recorded on, or recovered from, the selected track, said apparatus comprising:

a frame;

a lead screw mounted for rotation on said frame;

means for supporting said transducer head, said means being threadedly coupled to said lead screw;

a geneva wheel coupled to said lead screw; and

a geneva driver, engagable with said geneva wheel, for controllably rotating said geneva wheel and thereby rotating said lead screw in a prescribed fashion, to controllably move said supporting means, and thereby position said transducer head in the prescribed relationship relative to the selected track on the recording medium.

4,270,156

ELECTRONIC SYNCHRONIZATION MONITOR

Warren C. Fry, Connellsville, Pa., assignor to General Equipment & Mfg. Co., Inc., Louisville, Ky.

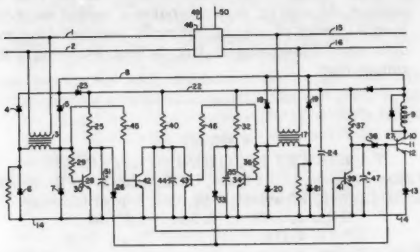
Filed Apr. 9, 1979, Ser. No. 28,559

Int. Cl.³ H02H *3/36*

U.S. Cl. 361—21 **3 Claims**

1. An electronic power line synchronization monitor comprising, in combination, a first rectifier connected to a first of two power lines being monitored, a second rectifier connected to a second of two power lines being monitored, a first electronic switch that is conductive during alternate half cycles of the voltage on the first power line, a second electronic switch that is conductive during alternate half cycles of the voltage on the second power line, a condenser that is connected through a resistor to said rectifiers, said electronic switches being con-

nected to and arranged to discharge said condenser when conductive, and indicating means powered by said rectifiers



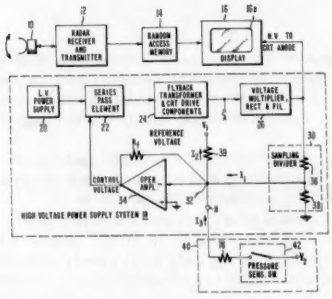
and connected to said condenser for indicating a rise in voltage on said condenser.

4,270,157

POWER SUPPLY PROTECTION CIRCUIT

Charles A. Clark, Jr., Chatsworth, Calif., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 849,399, Nov. 7, 1977, abandoned. This application May 11, 1979, Ser. No. 38,079
Int. Cl.[3] H02H *7/04*
U.S. Cl. 361—35 **7 Claims**



1. In combination:

a power supply having an output signal and being of the type which includes feedback means to maintain said output signal at a preselected value;

means responsive to an environmental parameter attaining a preselected value for providing a command signal; and

means coupled to said feedback means and responsive to said command signal for providing to said feedback means a signal for altering said output signal from said preselected value so long as said command signal is present;

said feedback means including a summing node and means to apply to said summing node:

a. a signal of one polarity and of magnitude corresponding to the value of said output signal;

b. a reference signal of polarity opposite that of said one polarity and of magnitude equal to that of said signal of one polarity when said output signal is at said preselected value; and

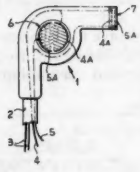
c. said altering signal having the same polarity as said first signal.

4,270,158

SYSTEM OF PROTECTION AGAINST SHORT CIRCUITS AND FULMINATIONS

Giovanni Gilardoni, and Sergio Gilardoni, both of Lodi, Italy, assignors to Antonino Ravida and Regina Carla Ezzevalli Ravida, both of Lodi, Italy

Filed Oct. 25, 1978, Ser. No. 954,451
Claims priority, application Italy, Nov. 3, 1977, 29305 A/77
Int. Cl.[3] H02H *3/16*
U.S. Cl. 361—42 **12 Claims**



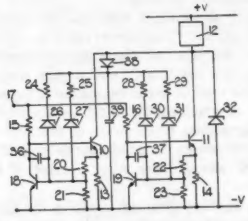
1. Electronically fed apparatus protected against electric current short circuits, comprising a case defining openings therein and containing an electrical operating unit, a multiconductor feeding cable for a main feeding line connected to said operating unit, a two-conductor auxiliary elecrical line, connecting means for connecting said operating unit to a socket through said feeding cable, a pair of reciprocally spaced and electrically insulated wire nets screening each opening of the case, said auxiliary electrical line having each conductor connected to one of said wire nets, a switch connected to said main feeding line to disconnect each of the conductors of at least the main feeding line, a relay for holding said switch in a switched on position, a low tension auxiliary source consisting of a transformer means fed by said main feeding line downstream of said switch from a current supplied by said switch and an electronic cooperating circuit, said auxiliary source feeding said auxiliary electrical line and said relay through said electronic cooperating circuit, said electronic cooperating circuit being controlled by a short-circuit signal coming from said auxiliary electrical line for interrupting an electric current through said relay whereby said switch opens disconnecting the operating unit and auxiliary source from a source of voltage.

4,270,159

TRANSISTOR PROTECTION CIRCUITS

Allan S. Buckle, Kenilworth, England, assignor to Lucas Industries Limited, Birmingham, England

Filed May 1, 1979, Ser. No. 35,262
Int. Cl.[3] H02H *3/38*
U.S. Cl. 361—79 **11 Claims**



1. A transistor circuit comprising a power supply rail, a return rail, a load terminal for connection by a load to the supply rail, first and second power transistors having their collector-emitter paths in parallel between the load terminal and the return rail so as to share between them a load current, first and second means sensitive to the current carried by the

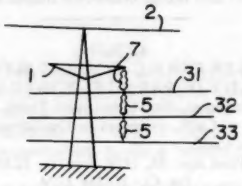
first and second power transistors, respectively, and operating to limit the current in each power transistor, means sensitive to the voltage across the collector-emitter paths of the power transistors and connected to vary the current limit in accordance with said voltage, said voltage circuits each including a zener diode and a resistor, a diode having one pole connected to the load terminal, and a capacitor connecting the other pole of said capacitor to the return rail, the first and second series circuits being connected between said other pole of the diode and the respective current sensitive means.

4,270,160

LIGHTNING RESISTIVE DEVICE IN AERIAL POWER TRANSMISSION SYSTEM

Nobuo Nagai, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 16, 1979, Ser. No. 21,175
Claims priority, application Japan, Mar. 17, 1978, 53-31294
Int. Cl.³ H02H *9/04*
U.S. Cl. 361—132 **4 Claims**



1. A power transmission system including lightning resistive means, comprising:

at least one steel tower;

at least three power transmission cable means conducting three current phases;

a first lightning resistive means connected between each said at least one steel tower and one of said power transmission cable means, said lightning resistive means supporting said one of said power transmission cable means; and

additional lightning resistive means serially connecting the remainder of said power transmission cable means to one another and to said first power transmission cable means in a vertically suspended array, for supporting said remainder,

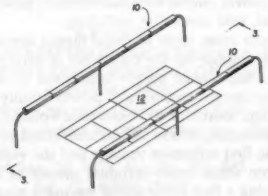
wherein at least said additional lightning resistive means comprises an insulator and a lightning arrester including a nonlinear resistor having as a main component zinc-oxide sintered at high temperature.

4,270,161

LIGHTING APPARATUS

Michael L. Perretta, Manlius, N.Y., assignor to Crouse-Hinds Company, Syracuse, N.Y.

Filed Jun. 8, 1979, Ser. No. 47,266
Int. Cl.³ F21V *21/00*
U.S. Cl. 362—249 **11 Claims**



1. Lighting apparatus comprising:

an elongated beam of light reflective material and of substantially polygonal cross section,

lighting means mounted on the exterior of said beam, and

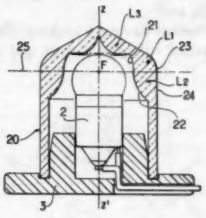
means connected to said beam for supporting it in an elevated, substantially horizontally extending position.

4,270,162

BEACON LAMP

Dominique Cherouge, Le Vaudreuil Ville Nonvelle, France, assignor to Compagnie Industrielle des Piles Electriques "Cipel", Levallois-Perret, France

Filed Apr. 13, 1979, Ser. No. 30,052
Claims priority, application France, Apr. 24, 1978, 78 12031
Int. Cl.³ F21V *5/04*
U.S. Cl. 362—311 **5 Claims**



1. A beacon lamp including substantially point source of light located at a point F and a transparent cap enclosing the light source, the cap including an annular lens disposed around an axis zz' passing through the point F, the lens being adapted to refract light from the light source to form a beam substantially parallel to and including a plane perpendicular to the axis zz' and passing through the point F, the cap having a closed end located on one side of said plane and an open end located on the other side of said plane, wherein the annular lens comprises a first zone (L_1) and a second zone (L_2) located on said one and said other sides, respectively, of the plane, said first and said second zones being contiguous, the inside surfaces and outside surfaces of the zones being defined in terms of their cross-sectional profiles in a plane including the axis zz', as follows:

the cross-sectional profile of the inside surface of the first zone is a line, the distance of which from the axis zz' decreases with increasing distance from said plane;

the cross-sectional profile of the inside surface of the second zone is a line curved to be convex towards the axis zz', and the distance of which from the axis zz' increases with increasing distance from said plane;

the cross-sectional profile of the outside surface of the first zone is a line curved to be convex away from the axis zz'; and

the cross-sectional profile of the outside surface of the second zone is a line, the distance of which from the axis zz' does not decrease with increasing distance from said plane, such that the cross-sectional profiles of said inner and outer surfaces have no reentrant portions, so that any line parallel to the axis zz' intersects either profile no more than once, whereby the cap is adapted to be molded between a single inner male die and a single outer female die.

4,270,163

BRIDGE CONVERTER CIRCUIT

Richard H. Baker, Bedford, Mass., assignor to Exxon Research & Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 944,608, Sep. 21, 1978, abandoned. This application Aug. 2, 1979, Ser. No. 63,347
Int. Cl.³ H02M *7/537*
U.S. Cl. 363—43 **21 Claims**

1. A bridge converter circuit, comprising:

a first operating voltage terminal for receiving +E volts;

a second operating voltage terminal for receiving −E volts;

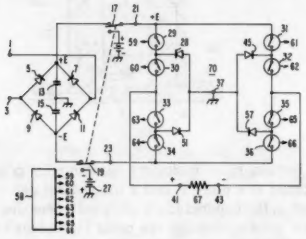
a reference voltage terminal for receiving a reference potential;

first and second output terminals for connection to a load therebetween;

first and second banks of switches located in diagonally opposing arms of said bridge converter, each bank having first, second, and third terminals, their first terminals being individually connected to said first and second operating voltage terminals, respectively, and their second terminals being individually connected to said first and second output terminals, respectively;

first diode means having an anode electrode connected to said reference voltage terminal, and a cathode electrode connected to the third terminal of and in combination with said first bank of switches forming a gated unidirectional current path; and

second diode means having a cathode electrode connected to said reference voltage terminal, and an anode electrode



connected to the third terminal of and in combination with said second bank of switches forming a gated unidirectional current path;

said first and second banks of switches each being operable to a first condition for electrically connecting their respective second and third terminals together, to a second condition for electrically connecting their respective first, second and third terminals, together, said first and second banks of switches being concurrently operable to their first conditions for producing zero volts across said load, to their second and first conditions, respectively, for producing +E volts across said load, and to their second conditions for producing +2E volts across said load, whereby said first and second banks of switches are repetitively operable through a given sequence of the latter three combinations of their respective conditions, for producing a predetermined half-wave positive polarity AC voltage waveform across said load.

4,270,164

SHORT CIRCUIT PROTECTION FOR SWITCHING TYPE POWER PROCESSORS

Kenneth R. Wyman, and Gerard A. Gallagher, both of Pittsburgh, Pa., assignors to Contraves Goerz Corporation, Pittsburgh, Pa.

Filed Feb. 28, 1979, Ser. No. 16,187
Int. Cl.³ H02M 7/122
U.S. Cl. 363—56 **12 Claims**

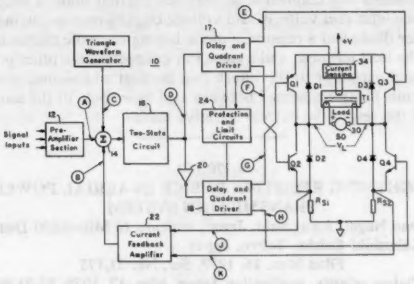
1. A servo controller having a switching output supplying an inductive load having protection against a short circuit current comprising:

a bridge connected output section;

first and second windings connected in series with the load connected to the output of the bridge connected output section;

a third winding inductively coupled to said first and second windings to provide an output representative of the rate of current change in the first or second windings;

a threshold detector connected to said third winding to provide a signal when the voltage induced in the third winding exceeds a predetermined value; and,



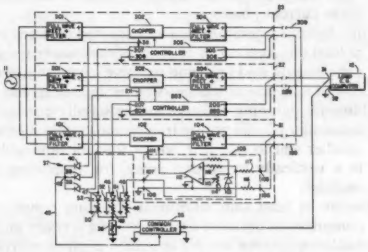
control means responsive to said threshold detector for turning off said bridge connected output section.

4,270,165

CONTROLLER FOR D.C. CURRENT SUPPLIED BY A PLURALITY OF PARALLEL POWER SUPPLIES

Ronnie L. Carpenter, San Diego, and Frank Cathell, Chula Vista, both of Calif., assignors to Qualidyne Systems, Inc., Chula Vista, Calif.

Filed Apr. 24, 1979, Ser. No. 32,857
Int. Cl.³ H02M 3/24
U.S. Cl. 363—65 **25 Claims**



1. In combination,

I. a plurality of power supplies, $P_1 \ldots P_k \ldots P_n$, where n is an integer greater than 1 and k is selectively 1 . . . n, supply P_k being responsive to an a.c. source and supplying a d.c. current to a common d.c. load for the power supplies; supply P_k including:

(1) power output terminal means connected to supply the d.c. current to the d.c. load;

(2) a controller for the amplitude of the d.c. current supplied by the power output terminal means of power supply P_k to the load, said controller including:

(i) remote sense input terminal means across which a d.c. input voltage for the controller is derived;

(ii) d.c. impedance means connected in series with the power output terminals of power supply P_k;

(iii) a first source of d.c. reference voltage;

(iv) a first comparison circuit connected to be responsive to the first reference voltage and the voltage across the remote sense input terminal means of supply P_k for deriving a first error signal having a magnitude indicative of the deviation of the first reference voltage from the voltage across the remote sense terminal means of supply P_k; and

(v) means responsive to the first error signal for controlling the amplitude of the d.c. current supplied by power supply P_k to the load;

II. a second source of d.c. reference voltage;

III. a second comparison circuit connected to be responsive to the d.c. voltage across the load and the voltage of the second source for deriving a second error signal indicative of the deviation of the second reference voltage from the d.c. load voltage; and

IV. a variable d.c. impedance connected so its value is responsive to the amplitude of the second error signal, said variable impedance having terminals connected in parallel across the sense input terminal means of the controllers of power supplies $P_1 \ldots P_k \ldots P_n$, whereby a voltage is developed across the remote sense input terminal means of the controller for supply P_k in response to the current flowing to the remote sense terminal means of the controller for supply P_k from the load terminal means of supply P_k and the variable impedance, said developed voltage causing the current supplied by power supply P_k to the load to be approximately equal to the current supplied by each of power supplies $P_1 \ldots P_n$.

4,270,166
CIRCUIT ARRANGEMENT FOR PRODUCING A REGULATED HIGH DC VOLTAGE FROM A THREE-PHASE CURRENT

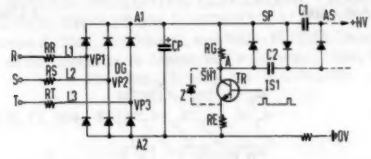
Josef Immler, Puchheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 15, 1979, Ser. No. 12,380

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1978, 2809275

Int. Cl.³ H02P *13/24*

U.S. Cl. 363—89 **10 Claims**



1. A circuit arrangement for producing a regulated high dc voltage from three-phase current, comprising:

a three-phase current bridge rectifier including three connection points and a high voltage output;

a control circuit including a transistor having a collector-emitter path connected in parallel with said bridge rectifier and a base for receiving a pulse-shaped ac control current, and an impedance connected between said three-phase current bridge rectifier and said transistor; and

first, second and third resistors, each of said resistors connected to a respective connection point and adapted for connection to a respective phase of a three-phase supply.

4,270,167
APPARATUS AND METHOD FOR COOPERATIVE AND CONCURRENT COPROCESSING OF DIGITAL INFORMATION

Robert J. Koehler, Cupertino, Calif., and John A. Bayliss, Portland, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

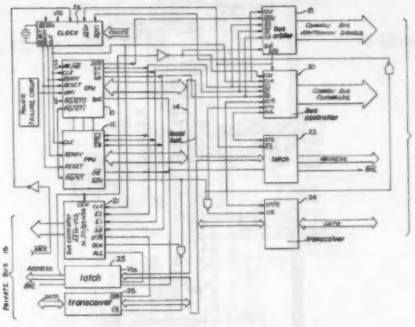
Filed Jun. 30, 1978, Ser. No. 921,082

Int. Cl.³ G06F *15/16*

U.S. Cl. 364—200 **21 Claims**

1. A circuit for providing arbitration of a bus between a first and second processor mutually coupled to a bus, each processor being arranged and configured to execute at least one predetermined type of instruction not entirely executable by the other processor, wherein said first processor fetches all instructions and wherein said second processor detects at least one predetermined type of instruction executable therein, said circuit comprising:

first bidirectional means in said first processor for receiving a bus request signal indicative of a request from said second processor to said first processor for access and control of said bus, for selectively generating a bus grant signal indicative of release by said first processor of access and control of said bus, and for receiving a bus release signal indicative of a release by said second processor to said first processor of access and control of said bus;



second bidirectional means in said second processor for selectively generating said bus request signal in response to said second processor having detected said one predetermined type of instruction executable in said second processor, for receiving said bus grant signal, and for selectively generating said bus release signal;

wherein said first processor includes a means for transmitting a plurality of status signals indicative of the type of transfer cycle being performed by said first processor; and

whereby a plurality of instructions may be cooperatively processed in a concurrent manner in said first and second processors.

4,270,168
SELECTIVE DISABLEMENT IN FAIL-OPERATIONAL, FAIL-SAFE MULTI-COMPUTER CONTROL SYSTEM

Richard D. Murphy, Monroe, and Douglas H. Clelford, Shelton, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 31, 1978, Ser. No. 938,583

Int. Cl.³ G06F *11/00, 11/08, 15/16*

U.S. Cl. 364—200 **5 Claims**

1. A selective disablement, fail-operational, and fail-safe multi-computer process control system, comprising:

a plurality of computer systems;

a data connection between each computer and at least one other one of said computers;

each of said computer system comprising:

a plurality of outputs for controlling related functions of said process;

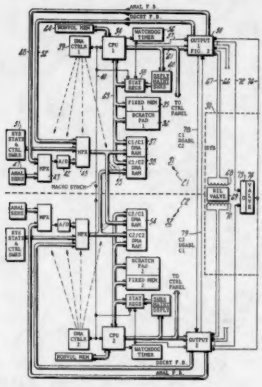
a plurality of inputs providing data manifestations related to the control of said process;

a data link connected to said data connection for providing data communication with another of said computer systems;

a disable connection between it and said another computer system; and

program controlled means for providing a plurality of self tests including bit by bit tests of at least a portion of the memory related to an important portion of said process and providing a test fault manifestation in response to any

of said self tests failing, reading in of data from said inputs and calculating results manifestations, receiving calculation result manifestations across said data link from said another computer system, comparing the calculation result manifestations of both computer systems and, in response to comparison thereof, providing said calculation result manifestation to said outputs, or alternatively providing an error manifestation if the two calculation result manifestations do not compare, disabling said computer system in response to one or more of said self test fault manifestations, providing a manifestation over said data link to indicate to said another computer system the fact of said computer system being disabled, registering the fact



of said another computer system being disabled if provided thereto over said data link, by-passing the portion of said program for comparing calculations with said another computer system in response to a registered manifestation indicating that said another computer system has disabled itself, and forcing a disabled status in said computer system and said another computer system via said disable connection in response to said error manifestation concurrently with the absence of a registered manifestation indicating that said another computer system has disabled itself, whereby, if one computer system senses disagreement with another nondisabled computer system, such one computer system will disable itself and such another computer system.

4,270,169

ARRAY PROCESSOR

David J. Hunt, Hitchin, and Stewart F. Reddaway, Baldock, both of England, assignors to International Computers Limited, London, England

Filed Mar. 15, 1979, Ser. No. 20,802

Claims priority, application United Kingdom, May 3, 1978, 17404/78

Int. Cl.[3] **G06F** *15/16*

U.S. Cl. 364—200 **2 Claims**

1. An array processor comprising

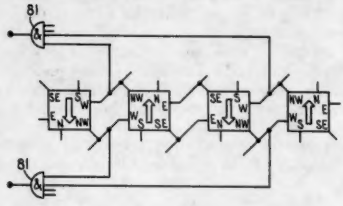
(a) a plurality of identical processing modules in rows and columns to form a two-dimensional rectangular array;

(b) each module having a first set of terminals along a first edge of said module and a second set of terminals along a second edge of said module, said second edge being parallel to said first edge, said second set of terminals transferring signals which are functionally different from the signal transferred by said first set;

(c) each module comprising means for producing response signals and means for coupling said response signals internally of the module to terminals of said first set of terminals;

(d) the modules of alternate columns being rotated 180° with respect to each other so that the first sets of terminals of adjacent modules in the same row are opposite each other and also the second sets of terminals of adjacent modules in same row are opposite each other;

(e) the mutually opposite terminals being connected together;



(f) a plurality of gates; and

(g) means for connecting each gate to a plurality of the interconnected mutually opposite pairs of terminals of the first sets of terminal whereby the outputs of the gates are the overall response signals.

4,270,170

ARRAY PROCESSOR

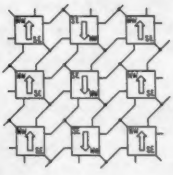
Stewart F. Reddaway, Baldock, England, assignor to International Computers Limited, London, England

Filed Mar. 15, 1979, Ser. No. 20,912

Claims priority, application United Kingdom, May 3, 1978, 17403/78

Int. Cl.[3] **G06F** *15/16*

U.S. Cl. 364—200 **2 Claims**

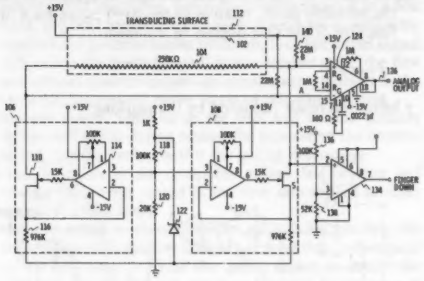


1. An array processor comprising a plurality of integrated circuit chips arranged in rows and columns in a two-dimensional rectangular array, each chip containing a two-dimensional sub-array of processing elements arranged in rows and columns, and each chip having a plurality of diagonal and non-diagonal connection pins, the processing elements along each edge of the sub-array of at least one of the chips being connected by way of said connection pins to the elements along the edge of the sub-array of a neighboring chip, the processing elements in each corner of the sub-array thus having two such connections to two different nearest neighboring chips, wherein the two connections to the element in one corner of the sub-array share a single one of said diagonal pins which is connected to the nearest non-diagonal pin on each of the two neighboring chips nearest that diagonal pin, and similarly the two connections to the element in the diagonally opposite corner of the sub-array share another single one of said diagonal pins which is connected to the nearest non-diagonal pin on each of the two neighboring chips nearest that diagonal pin.

4,270,171
POSITION SENSING AND INDICATING DEVICE

James A. Maples, 876 Colorado Ave., Palo Alto, Calif. 94303, and Robert B. Pepper, Box 277, Bolinas, Calif. 94924

Filed Mar. 7, 1979, Ser. No. 18,411
Int. Cl.[3] H05B *39/00*
U.S. Cl. 364—480 31 Claims



1. A level controlling device comprising:

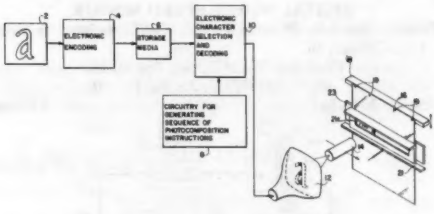
position sensing transducer means having an elongated transducing surface for detecting the presence and position of an operator's finger on the tranducing surface; and

circuit means connected to the transducer means for producing a first signal representative of the fact that an operator's finger is present on the transducing surface and a second signal representative of the position of the operator's finger on the transducing surface for controlling the level of a utilization device.

4,270,172
ULTRAHIGH RESOLUTION PHOTOCOMPOSITION SYSTEM EMPLOYING ELECTRONIC CHARACTER GENERATION FROM MAGNETICALLY STORED DATA

James A. Tidd, Northbrook, and Miles H. Tidd, Deerfield, both of Ill., assignors to Alphatype Corporation, Niles, Ill.

Filed Sep. 15, 1978, Ser. No. 942,893
Int. Cl.[3] G06F *15/20, 3/153*
U.S. Cl. 364—523 61 Claims


ELECTRONIC ENCODING
STORAGE MEDIA
ELECTRONIC CHARACTER SELECTION AND DECODING
CIRCUITRY FOR GENERATING SEQUENCE OF PHOTOCOMPOSITION INSTRUCTIONS

1. A method for forming a magnetic font disc upon which alphabet character designs are recorded by coded binary signals stored by magnetically altering a plurality of ordered storage cells permitting retrieval of the signals to enable an electronic display to generate successive optical character images as selectively desired, comprising the steps of

(a) scanning an optical image of a character design having at least one closed boundary contour in a predetermined line scanning pattern relative to a predetermined reference;

(b) generating in succession coordinate signals representative of the coordinates of boundary points defined by the intersection of the boundary contour of the character design with the line scanning pattern;

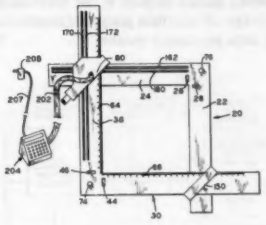
(c) converting the coordinate signals into successive encoded binary signals describing successive end to end translational paths between successive plural boundary points selected from a set of possible translational paths to best approximate the boundary contour by starting at a first boundary point and continuing around the entire boundary contour in successive ordered steps different from the order in which the coordinate signals are generated in step (b) until the first boundary point is again reached; and

(d) storing all of the encoded binary signals for a single character design in successive storage cells of the magnetic font disc in an order corresponding to the order of the successive end to end translational paths.

4,270,173
ELECTRONIC SCALER

Henry G. Suttler, 61 Sparks St., Cambridge, Mass. 02138

Filed Oct. 5, 1979, Ser. No. 82,038
Int. Cl.[3] G06F *15/20*
U.S. Cl. 364—523 35 Claims



1. An electronic photoscaler comprising:

a first framing arm including two adjacent straight cursor means which are substantially perpendicular,

a second framing arm having two adjacent straight cursor means which are substantially perpendicular,

means adjustably connecting said first and second arms together in overlapping arrangement to enclose a rectangular area of adjustable size bordered by said cursor means, said arms being movable relative to each other along orthogonal directions parallel to said cursor means,

detector means associated with said arms for detecting the degree of relative displacement between said arms along each of said orthogonal directions and providing an output signal quantitatively corresponding to said degree of displacement, and

electronic calculator means connected to said detector means and having an input connected to said output signal and having a display, said calculator means being responsive to said output signal for storing data corresponding to an initial relative position of said arms and data corresponding to a final relative position of said arms, and providing an indication associated with said display corresponding to the ratio of the areas enclosed by said cursor means in the initial and final positions, respectively, whereby an indication is made of the degree of enlargement or reduction between the respective areas.

4,270,174
REMOTE SITE ENGINE TEST TECHNIQUES

Richard A. Karlin, Chicago, and Carl J. Koskinen, Barrington, both of Ill., assignors to Sun Electric Corporation, Crystal Lake, Ill.

Filed Feb. 5, 1979, Ser. No. 9,258
Int. Cl.[3] G06F *15/46*
U.S. Cl. 364—551 23 Claims

1. Apparatus for analyzing a first internal combustion engine located at a first site and a second internal combustion engine located at a second site displaced from the first site comprising:

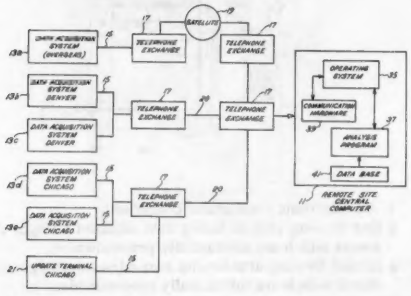
first data acquisition means located at the first site for generating, displaying and storing first condition data quantitatively defining a plurality of conditions of the first engine

and for displaying first diagnostic data resulting from analysis of the first condition data based on first program instructions;

second data acquisition means located at the second site for generating, displaying and storing second condition data quantitatively defining a plurality of conditions of the second engine and for displaying second diagnostic data resulting from analysis of the second condition data based on second program instructions;

data processor means located at a third site displaced from the first and second sites for storing a data base defining engine condition specifications and for analyzing the first and second condition data by means of the data base in order to generate the first diagnostic data representing a diagnostic evaluation of the first engine and the second diagnostic data representing a diagnostic evaluation of the second engine;

first memory means located at the first site and dedicated to the storage of said first program instructions independent of the data processor means;



second memory means located at the second site and dedicated to the storage of said second program instructions independent of the data processor means;

terminal means for updating the data base; and

linking means for enabling the first and second condition data to be transmitted from the first and second data acquisition means, respectively, to the data processor means, for enabling the first and second diagnostic data to be transmitted from the data processor means to the first and second data acquisition means, respectively, and for enabling the first and second diagnostic data to be stored by the first and second data acquisition means, respectively, whereby acquisition and display of condition data representing engine conditions occurs at the sites of the engines, detailed analysis of the condition data is performed by the data processor means at the third site, and the results of the analysis are displayed at the sites of the engines, so that engines at displaced sites can be analyzed in detail by means of an up-to-date data base located at a remote site.

4,270,175

APPARATUS FOR DIVIDING A SEGMENT OF VARIABLE LENGTH INTO EQUAL PARTS

Pierre Lacombe, Orleans, France, assignor to Fonderie et Ateliers des Sablons, Saint Jean-Le-Blanc, France

Filed Dec. 28, 1978, Ser. No. 973,911

Claims priority, application France, Dec. 30, 1977, 77 39839

Int. Cl.[3] G06G *7/16, 7/48;* G06J *1/00*

U.S. Cl. 364—562 **6 Claims**

1. Apparatus for dividing in equal parts, a segment of variable length by any whole number divisor characterized in that it comprises:

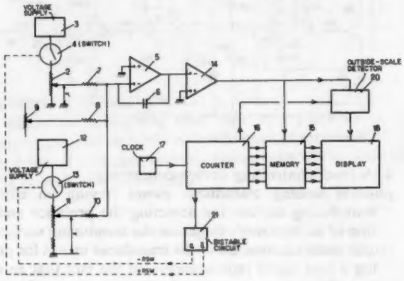
(a) means allowing the realization of said segment by a difference in distance separating a movable point and a fixed point;

(b) marking means for marking successively, when the movable point is displaced relative to the fixed point, in the interval of a segment, the successive divisions with their numeral representation in part; and

(c) means to tie the numerical marking to the movement of the movable point, relative to the fixed point, by a linear function of the first degree, in the form

$$y=ax+b$$

y being the result furnished by the marking;



a being a constant representative of the ratio between the divisor and the total length of the segment; and

x is the position of the movable point relative to the fixed point;

said tying means including an arrangement in which the movable point is coupled to a transducer which delivers a linearly varying voltage proportional to the displacement of said movable point, and that the voltage is directed to an analog/digital converter with a double ramp of integration operating by reference to an external reference voltage allowing said parameter a to be acted upon.

4,270,176

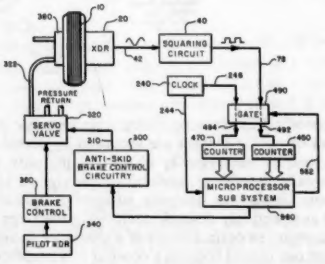
DIGITAL WHEEL SPEED SENSOR

Thomas Skarvada, Woodland Hills, Calif., assignor to Crane Co., Chicago, Ill.

Filed Sep. 27, 1979, Ser. No. 80,123

Int. Cl.[3] G06F *15/20;* B60T *8/00*

U.S. Cl. 364—565 **5 Claims**



4. In a brake control system including a rotatable wheel and means, responsive to the wheel, for generating a periodic wheel signal having a frequency indicative of the rotational behavior of the wheel, an apparatus for precisely measuring the time duration of one or more cycles of the wheel signal comprising:

clock means for generating a periodic clock signal;

first counter means for maintaining a count indicative of clock signal cycles;

second counter means for maintaining a count indicative of wheel signal cycles;

gating means for selectively enabling and disabling the first and second counter means, said gating means responsive both to a control signal and to the phase angle of the wheel signal, such that, when the control signal is in a first state, the first and second counter means are consistently enabled at a predetermined phase angle of the wheel signal and, when the control signal is in a second state, the first and second counter means are consistently disabled at the same predetermined phase angle of the wheel signal;

computer means, coupled to the first and second counter means and to the gating means, for generating the control signal to selectively control the gating means;

means, included in the computer means, for reading and storing the counts stored in the first and second counter means at a first time;

means, included in the computer means, for placing the control signal in the first state at a second time, subsequent to the first time, to cause the gating means to enable the first and second counter means at the next occurrence of the predetermined phase angle of the wheel signal;

means, included in the computer means, for placing the control signal in the second state at a third time, subsequent to the second time, to cause the gating means to disable the first and second counter means at the next occurrence of the predetermined phase angle of the wheel signal;

means, included in the computer means, for reading and storing the counts stored in the first and second counter means at a fourth time, subsequent to the third time and after the first and second counter means have been disabled;

means, included in the computer means, for calculating the difference between the count stored in the first counter means at the first and fourth times as a measure of elapsed time; and

means, included in the computer means, for calculating the difference between the count stored in the second counter means at the first and fourth times as a measure of the number of wheel signal cycles occurring during the elapsed time.

4,270,177

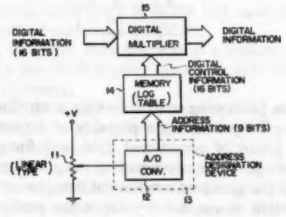
DIGITAL AMPLITUDE CONTROL FOR DIGITAL AUDIO SIGNAL

Kenjiro Endoh; Yoshiyuki Ishizawa; Masanori Tanaka, all of Yokohama, and Koji Iwasaki, Gotenba, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 20, 1979, Ser. No. 50,215

Int. Cl.³ H03G *3/00*

U.S. Cl. 364—571 **9 Claims**



1. A digital amplitude control apparatus for a digital audio input signal comprising: a manipulatable digital signal generating means for producing a digital signal which is substantially linearly related to a manipulated variable to control the amplitude of the digital audio input signal; memory means storing a series of digital amplitude control values with predetermined amplitude changing characteristics in memory locations, and connected to receive as an address signal the digital signal from said digital signal generating means so as to read out a stored digital amplitude control value from one of said memory locations designated by the address signal; and digital multiplier means multiplying the digital audio input signal to be amplitude-controlled by the digital amplitude control value from said memory means.

4,270,178

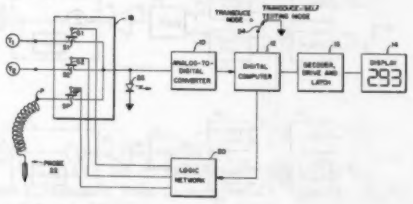
MEASURING SYSTEM INCORPORATING SELF-TESTING PROBE CIRCUIT AND METHOD FOR CHECKING SIGNAL LEVELS AT TEST POINTS WITHIN THE SYSTEM

John E. Lillig, Diamond Bar, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 816,997, Jul. 19, 1977, abandoned. This application Nov. 14, 1979, Ser. No. 94,267

Int. Cl.³ G01R *31/00*

U.S. Cl. 364—579 **3 Claims**



1. In a system for measuring a sample parameter and including transducing means for monitoring said parameter and generating an analog signal in response thereto, an analog-to-digital converter for converting said analog signal to digital form, computer means operating on said digital signal to generate an output digital signal providing information regarding said parameter, said computer means including storage capacity for storing information regarding said parameter, and means for displaying said output digital signal, improved means for self-testing signal levels at test points within said system comprising:

a probe having a signal sensing element on one end adapted to be placed in contact with any of said test points;

an analog multiplexer having a plurality of input terminals and an output terminal, said output terminal connected to said analog-to-digital converter;

means connecting the other end of the probe to one input terminal of said analog multiplexer to supply a probe signal thereto, said probe as connected to said one input terminal being of a length enabling it to be manipulated to place the signal sensing element on said one end thereof in contact with any of said test points within said system;

means coupling said transducing means to another input terminal of said analog multiplexer to supply said transducing signal thereto;

logic means controlling said analog multiplexer to multiplex the input signals thereto and hence to supply a multiplexed signal containing both transducing and probe signal information to said analog-to-digital converter for conversion and supply to said computer means, said computer means for de-multiplexing said multiplexed signal and processing both said transducing signal and said probe signal information;

switching means connected to said computer means for switching said system to either (1) a transducing mode for measuring said parameter or to (2) a combined transducing/self-testing mode for measuring both said parameter and said test point signal levels; and

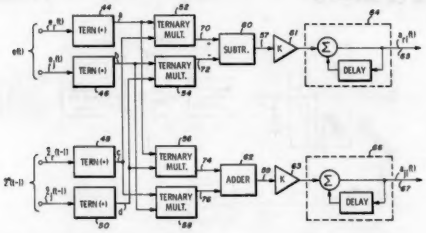
control means in said computer means and responsive to said

switching means for outputting said probe signal to said displaying means and for simultaneously inhibiting the outputting of said transducing signal thereto, said computer means, while said probe signal is displayed, continuing to process and store said transducing signal information for subsequent retrieval and display when said switching means returns said system to said transducing mode.

4,270,179
COMPLEX TERNARY CORRELATOR AND METHOD FOR ADAPTIVE GRADIENT COMPUTATION

Bruce M. Sifford, Los Altos, and D. Thomas Magill, Palo Alto, both of Calif., assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 29, 1979, Ser. No. 53,226
Int. Cl.[3] G06F *15/31, 15/336*
U.S. Cl. 364—724 **10 Claims**



1. A complex ternary correlator for performing a correlation operation on a first complex input signal including a first real component signal and a first imaginary component signal and a second complex input signal including a second real component signal and a second imaginary component signal, and for developing complex correlation output signals comprising:

ternary operator means responsive to said first and second real and imaginary component signals and operative to develop ternary output signals terna, ternb, ternc and ternd, respectively:

ternary multiplier means responsive to crosspairs of said ternary output signals and operative to develop cross-product output signals (terna·ternc), (ternb·ternd), (ternb·ternc), and (terna·ternd), respectively;

means for subtracting said (ternb·ternd) signal from said (terna·ternc) signal to develop a third real component signal, and means for adding said (ternb·ternc) signal to said (terna·ternd) signal to develop a third imaginary component signal; and

means for accumulating said third real and imaginary signals to develop complex correlation output signals.

4,270,180
DELAY LINE TIME COMPRESSION CORRELATION CIRCUIT

John D. Charlton, Canyon Country, Calif., assignor to The Bendix Corporation (Electrodynamics Div), N. Hollywood, Calif.

Filed Nov. 9, 1979, Ser. No. 92,823
Int. Cl.[3] G06F *15/336*
U.S. Cl. 364—728 **13 Claims**

1. A delay line time compression correlation circuit utilizing a clock signal, comprising:

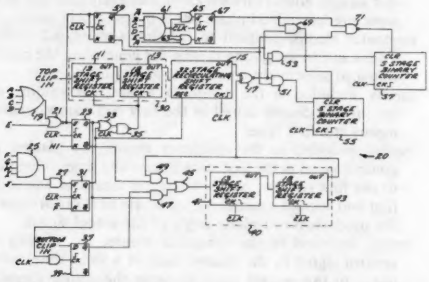
control counting means responsive to the clock signal for providing a first output indicative of correlation count and a second output indicative of beam position;

first and second storage means for sampling and storing respective input data for correlation,

first and second recirculating means for respectively receiving data from said first and second storage means, said first and second recirculating means providing respective sample outputs;

sample controlling means responsive to said control counting means for controlling the sampling and storing functions of said first and second storage means, and for controlling the transfer of data from said first and second storage means to said first and second recirculating means;

correlating means responsive to said respective sample outputs for providing a series of correlation outputs; and

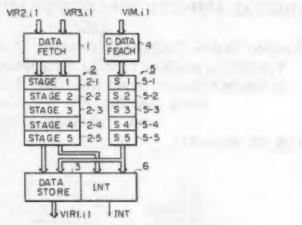


correlation counting means responsive to said control counting means and said correlation output for accumulating said correlation outputs and for providing an individual accumulation output associated with each beam position, said accumulation output being provided during the correlation of a beam position other than the beam position associated with said accumulation output.

4,270,181
DATA PROCESSING SYSTEM HAVING A HIGH SPEED PIPELINE PROCESSING ARCHITECTURE

Yoshiyuki Tanakura, Numazu, and Kelichiro Uchida, Kawasaki, both of Japan, assignors to Fujitsu Limited, Japan

Filed Aug. 29, 1979, Ser. No. 70,611
Claims priority, application Japan, Aug. 31, 1978, 53-106494
Int. Cl.[3] G06F *7/38*
U.S. Cl. 364—736 **14 Claims**



1. A data processing system having a pipeline processing architecture for processing a plurality of groups of data, including a group of conditional data, and for performing a sequence of operations upon each of the plurality of groups of data except the group of conditional data, comprising:

first pipeline means, having stages, for performing the sequence of operations upon each of the plurality of groups of data except the group of conditional data and for generating an operation result; and

second pipeline means, having stages, for transmitting the group of conditional data therein, wherein the stages of said first pipeline means and the stages of said second pipeline means are equal in number and synchronized on the same time base, and wherein said second pipeline

means is operatively connected to said first pipeline means,

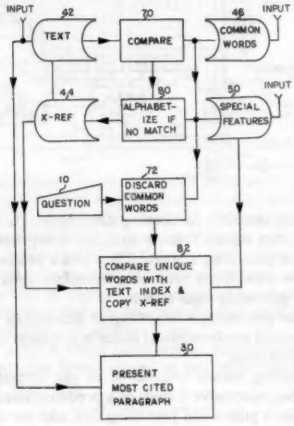
whereby the operation result of said first pipeline means is determined to be valid or invalid at the exit thereof in dependence upon the conditional data transmitted by said second pipeline means.

4,270,182

AUTOMATED INFORMATION INPUT, STORAGE, AND RETRIEVAL SYSTEM

Satya P. Asija, 1641 Cumberland St., Apt. 21, St. Paul, Minn. 55117

Filed Dec. 30, 1974, Ser. No. 537,551
Int. Cl.³ G06F *15/40*
U.S. Cl. 364—900 **17 Claims**



1. A process for information input using electromechanical devices, storage, search and output comprising the steps of:

(a) inputting textual information with full punctuation to a storage device;

(b) dividing the text into logical information units;

(c) assigning each logical unit of information a unique Logical Information Unit Number;

(d) assigning a unique storage address to each logical information unit;

(e) inputting plurality of common words such as, "I, we, you, he, she, it, as, an, at, am, are, was, is, on, in, upon, who, where, which, when, why,";

(f) arranging the common words in alphabetical order;

(g) establishing a match criteria;

(h) comparing each word from the text against each common word character by character;

(i) saving the word from the text at a separate location in case of a mismatch beyond the match criteria established in step (g) supra;

(j) arranging the saved words in alphabetical order;

(k) compiling & storing general purpose synonym directory in alphabetical order;

(l) compiling & storing special purpose searchonym directory with respect to the text stored in step (a) supra;

(m) adding synonyms and searchonyms to the words saved in step (i) supra;

(n) alphabetizing said saved words;

(o) computing and storing search index information against each saved word of step (n) supra;

(p) framing and inputting researcher's free-form narrative natural language non-preprogrammed question;

(q) comparing each word of the question with each of the common words stored in step (e) supra;

(r) saving the mismatched words from the question that do not satisfy the match criteria established in step (g) supra;

(s) adding synonyms and searchonyms to the words saved from the user's question;

(t) arranging the words saved from the question alongwith their synonyms and searchonyms in alphabetical order;

(u) matching each word saved from the question including its synonym against each word saved from the text including its searchonym;

(v) copying search index information of step (o) against each word that matches upto the match criteria of step (g);

(w) establishing a priority criteria for calling logical information units to the attention of the researcher of the textual information;

(x) presenting the logical information units to the researcher of the information in the order established in step (w) supra;

(y) reframing the question and repeating steps (p) through (x) supra in case of unsatisfactory response; and

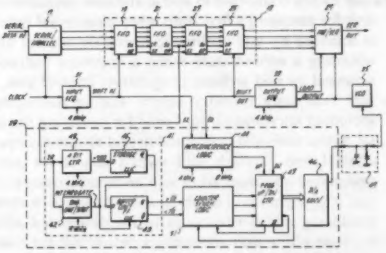
(z) framing the next question and repeating steps (p) through (y) supra, in case of satisfactory response.

4,270,183

DATA DEJITTERING APPARATUS

Robert L. Robinson, West Covina; David C. Hoff, Temple City, and Robert L. Midling, Azusa, all of Calif., assignors to Lockheed Aircraft Corp., Plainfield, N.J.

Filed Feb. 11, 1977, Ser. No. 767,807
Int. Cl.³ G06F *11/00*
U.S. Cl. 364—900 **15 Claims**



1. Dejittering apparatus for data comprising;

a first-in, first-out buffer adapted to be clocked for receiving and outputting said data;

input clocking means for clocking data into said buffer;

output clocking means for clocking data out of said buffer;

means for counting the amount of data clocked into said buffer by said input clocking means and for reducing said count in accordance with the amount of data clocked out by said output clocking means;

half-full circuit means for developing a half-full signal indicating that said buffer is less than or greater than approximately half-full;

counter synchronizing logic means responsive to said half-full signal for synchronizing said counter to the actual content of said buffer;

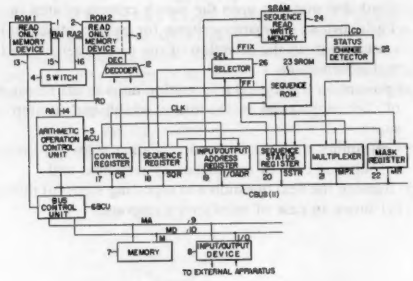
means for converting the count of said counting means into a frequency control signal; and

means responsive to said frequency control signal for controllin g the rate at which data is clocked out of said buffer by said output clocking means.

4,270,184
MICROPROCESSOR-BASED PROGRAMMABLE LOGIC CONTROLLER

Yoshiyuki Shimokawa, Hachioji, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 16, 1978, Ser. No. 887,060
Int. Cl.[3] G06F 9/22, 13/00
U.S. Cl. 364—900 4 Claims



1. A programmable logic controller comprising

an input/output device for inputting data indicating the actual status of external devices and for outputting signals indicating the desired status of the external devices,

a main memory device storing universal instructions and sequence instructions,

an arithmetic operation control unit connected to said main memory device for repeatedly and sequentially fetching the universal instructions and the sequence instructions and executing the same,

switch means connected to said arithmetic operation control unit for assuming a first state when a universal instruction is accessed by said arithmetic operation control unit and assuming a second state when a sequence instruction is accessed by said arithmetic operation control unit,

a first read only memory device storing microprograms including microinstructions used for executing the universal instructions and connected to said arithmetic operation control unit through said switch means for receiving designated addresses from said arithmetic operation control unit when said switch means is in said first state, and producing microinstructions of the designated addresses for controlling said arithmetic control unit for execution of the universal instructions,

a second read only memory device storing microprograms including microinstructions used for executing the sequence instructions, and connected to said arithmetic operation control unit through said switch means for receiving designated addresses from said arithmetic operation control unit when said switch means is in said second state, and

a sequence control unit connected to said second read only memory device and used for executing the sequence instructions,

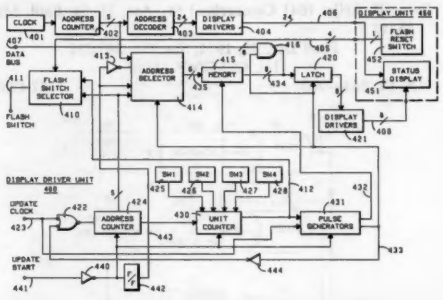
said second read only memory device producing microinstructions of the designated addresses for controlling said arithmetic operation control unit and sequence control unit for execution of the sequence instructions, and

said sequence control unit being controlled by said second read only memory drive to receive data indicating the status of the external devices obtained through said input-/output device and to execute the sequence instructions to produce signals indicating the desired status of the external devices.

4,270,185
MEMORY CONTROL CIRCUITRY FOR A SUPERVISORY CONTROL SYSTEM

Yitzhak Cohen, Yahud; Yigal Brandman, Ramat Hasharon, both of Israel, and Zvi Eckstien, Highland Park, Ill., assignors to Motorola Israel Limited, Tel-Aviv, Israel

Division of Ser. No. 807,850, Jun. 20, 1977, Pat. No. 4,161,718.
This application Dec. 4, 1978, Ser. No. 966,286
Int. Cl.[3] G11C 7/00
U.S. Cl. 364—900 10 Claims



1. Control circuitry for storing data signals in, and reading out stored data signals from, a memory, comprising:

means for providing a train of first clock pulses;

means for repetitively providing an update signal and repetitively providing data signals;

means for providing a select signal alternately having first and second predetermined states in response to successive update signals;

first counting means responsive to the update signal for counting successive frames of a predetermined number of first clock pulses and providing first address signals and a first output pulse for each frame;

second counting means responsive to the update signal for counting a predetermined number of first output pulses and provided a second output pulse thereafter;

means for providing a train of second clock pulses;

third counting means for counting successive frames of a predetermined number of second clock pulses and providing second address signals for each frame;

memory means having first and second portions; and

control means for causing said memory means to read out stored data signals from locations addressed by the second address signals in the first and second portions of the memory means in response to the first and second predetermined states of the select signal, respectively, and causing said memory means to store data signals in locations addressed by the first address signals in the first and second portions of the memory means in response to the second output pulse and the second and first predetermined states of the select signal, respectively, whereby the first and second portions of the memory means are alternately updated in response to successive update signals and the first clock pulses.

4,270,186
MULTIPLE GENERATOR BLOCK REPLICATE BUBBLE MEMORY DEVICE

William E. Flannery, Norristown, Pa., assignor to Sperry Corporation, New York, N.Y.

Filed May 31, 1979, Ser. No. 44,278
Int. Cl.[3] G11C 19/08
U.S. Cl. 365—15 8 Claims

1. A block replicate bubble memory device comprising:

a plurality of serial storage loops each having an input and an output gate,

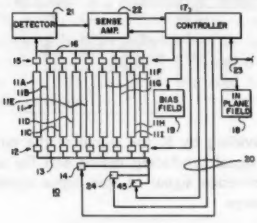
a write port for each storage loop connected to said input gates,

a read port for each storage loop connected to said output gates,

a serial write line connected to said write ports and adapted to provide data in parallel format to said storage loops simultaneously,

a first bubble generator connected to said serial write line and adapted to write data thereon in serial format,

a serial read line connected to said read ports and adapted to receive data in parallel format from said storage loops simultaneously, and



a bubble detector connected to said serial write line,

said bubble detector being connected on said serial read line substantially less than one-half of the storage loop time away from said storage loops, and

said first bubble generator being connected to said serial write line at a bit time distance away from said storage loops which is approximately equal to one-half of a storage loop time less the bit time distance said detector is removed from said storage loops,

whereby bubbles being destroyed at said detector may be replaced after being sensed in less than one-half of one storage loop time.

4,270,187

ACTIVATOR UNITS FOR IDENTIFICATION SYSTEMS AND SYSTEMS EMPLOYING SAME

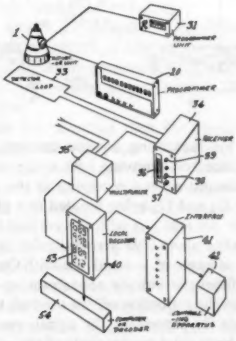
David A. Buttemer, P.O. Box 1252, Pietermaritzburg 3200, South Africa

Continuation of Ser. No. 842,878, Oct. 17, 1977. This application Mar. 15, 1979, Ser. No. 20,734

Claims priority, application South Africa, Oct. 21, 1976, 76/6264

Int. Cl.[2] G11C *13/00*

U.S. Cl. 365—189 **22 Claims**



1. A coded identification system comprising:

an activator unit comprising a programmable memory for storing one of a plurality of activator identification codes, means for decoding an externally applied information signal frequency coded with one of said plurality of identification codes and for storing a frequency decoded identification code in said programmable memory and means for modulating an electromagnetic radiation field established between said activator unit and a detector unit with a stored identification code;

means for establishing said electromagnetic radiation field between said activator and said detector;

a programming unit located externally of said activator unit comprising means for selecting one of a plurality of identification codes, means for frequency coding an information signal according to a selected identification code, and means for applying said frequency coded information signal to said activator unit;

a detector unit comprising means for sensing said modulated electromagnetic radiation field, and means for determining the identification code modulated on said electromagnetic radiation field.

4,270,188

NONVOLATILE SEMICONDUCTOR MEMORY APPARATUS

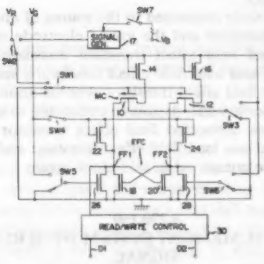
Shozo Saito, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 30, 1979, Ser. No. 98,746

Claims priority, application Japan, Dec. 7, 1978, 53/150555

Int. Cl.[3] G11C *11/40*

U.S. Cl. 365—189 **18 Claims**



12. A nonvolatile semiconductor memory apparatus comprising:

a plurality of flip-flop circuits each formed of a pair of gate insulated field effect transistors and having bistable terminals;

a memory section coupled to each of said flip-flop circuits, and having at least one memory cell, said memory cell including a pair of nonvolatile memory cell elements whose memory state can be repeatedly changed and which are coupled to said bistable output terminals of the respective flip-flop circuits;

shortcircuiting means for selectively shortcircuiting the current paths of said pair of gate insulated field effect transistors;

control voltage supply means for applying a control voltage to said memory cell elements for setting a mode of operation of said memory cell;

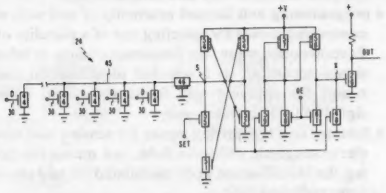
a plurality of cascade-connected shift register circuits; and

data transfer control means coupled between said plurality of flip-flop circuits and cascade-connected shift register circuits for controlling a data transfer between said flip-flop circuits and shift register circuits.

4,270,189
READ ONLY MEMORY CIRCUIT

Michael E. Brossard, Rochester, Minn.; Dale A. Heuer, Longmont, Colo., and Philip T. Wu, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 6, 1979, Ser. No. 91,842
Int. Cl.³ G11C *7/00, 7/06*
U.S. Cl. 365—205 **2 Claims**



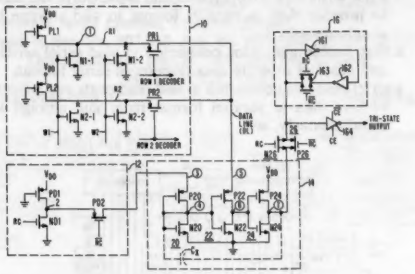
1. A semiconductor output sense circuit for providing a latched output signal comprising:
(a) a sense node;
(b) an output driver;
(c) means communicating the condition at said sense node to said output driver;
(d) latch means for maintaining the condition at said sense node at said output driver when said latch means is set;
(e) single clock means for providing a sequence of clock pulse cycles wherein each clock pulse cycle iniates and terminates said set condition of said latch means; and
(f) wherein said latching means comprises
a pair of cross connected field effect transistors;
a pair of load field effect transistors each operatively connected to one of said cross connected field effect transistors;
said sense node connected to the source of one load field effect transistor and the gating electrode of the cross connected field effect transistor associated with the other of said load field effect transistors; and
a set/reset field effect transistor with its drain connected to said sense node, its source connected to the drain of said cross connected field effect transistor associated with said one load field effect transistor and the gating electrode connected to said clock means.

4,270,190
SMALL SIGNAL MEMORY SYSTEM WITH REFERENCE SIGNAL

Clifford P. Jindra, North Plainfield, and James H. Atherton, Flemington, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 27, 1979, Ser. No. 106,882
Int. Cl.³ G11C *7/00, 7/06*
U.S. Cl. 365—208 **8 Claims**

1. The combination comprising:
a memory array of cells, each cell producing at its output a signal having either one of a high value (V_H) or a low value (V_L);
a reference signal producing means having an output at which is produced a signal which is less positive than V_H and which is more positive than V_L;
an inverting stage having first and second terminals, an input terminal, and an output terminal; said inverting stage having a "flip-point" voltage (V_{FP}) equal to V_P/K, where V_P is the potential applied between said first and second terminals; and K is a constant greater than 1; and where V_{FP} is the voltage for which the input voltage (V_{IN}) applied to said input terminal is equal to the output voltage (V_O) at said output terminal;
means for selectively coupling a cell output signal across said first and second terminals of said inverting stage, whereby the V_{FP} of said inverting stage has either a high value or a low value, corresponding to V_H and V_L, respectively; and

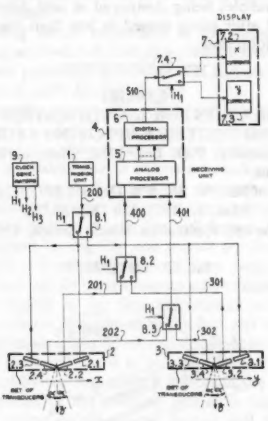


means for dividing by K the signal at the output of said reference signal producing means and for applying the divided reference signal to said input terminal of said inverting stage.

4,270,191
DOPPLER CURRENT METER FOR USE AT GREAT DEPTHS

Francois Peynaud, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 6, 1979, Ser. No. 91,753
Claims priority, application France, Nov. 10, 1978, 78 31862
Int. Cl.³ G01S *15/58*
U.S. Cl. 367—91 **7 Claims**



1. A device for measuring aquatic currents, known as a current meter, placed on a moving boat, comprising a Doppler effect sonar, transmitting and receiving in the directions D_1, D_2, D_3 and D_4, D_1 and D_2 being located in a plane $O\times z$ and forming an angle $+\alpha$ and $-\alpha$ with the vertical Oz, D_3 and D_4 being located in the plane Oyz perpendicular to $O\times z$ and D_3 and D_4 forming an angle of $+\alpha$ and $-\alpha$ with Oz and receiving signals coming from the volume reverberation in the aquatic medium and from the reflection off the sea bed, the device also comprising means for processing the signals received in order to calculate the horizontal components of the velocities of the currents relative to the boat and the horizontal components of the velocity of the boat, and means for calculating the horizontal components of the velocity of the currents at different depths, wherein the device comprises means for transmitting

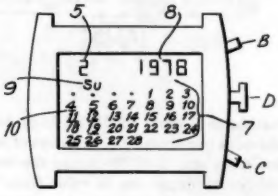
simultaneously at two frequencies f_1 and f_2 and means for receiving the volume reverberation signals affected by the Doppler effect at the frequencies $f_1^{(1)}$, $f_1^{(2)}$, $f_1^{(3)}$, $f_1^{(4)}$, $f_2^{(1)}$, $f_2^{(2)}$, $f_2^{(3)}$ and $f_2^{(4)}$ corresponding, respectively, to the emissions at the frequencies f_1 and f_2 in the directions D_1, D_2, D_3 and D_4, and means for receiving the signals at the frequencies $F^{(1)}$, $F^{(2)}$, $F^{(3)}$ and $F^{(4)}$ coming from the sea bed corresponding to waves at the frequency $F=f_1-f_2$ generated by the nonlinearity of the medium for the directions D_1, D_2, D_3, D_4, the signal processing device providing the values of the components of the boat/current velocity along Ox from the values $f_1^{(1)}-f_1^{(2)}$ and/or $f_2^{(1)}-f_2^{(2)}$ and the components along Oy from the values of $f_1^{(3)}-f_1^{(4)}$ and/or $f_2^{(3)}-f_2^{(4)}$, the components of the absolute velocity of the boat along Ox and Oy being calculated from the values $F^{(1)}-F^{(2)}$ and $F^{(3)}-F^{(4)}$, and wherein all these values of the velocity components are used to calculate the velocity of the currents.

4,270,192

ELECTRONIC TIMEPIECE

Yasuhiko Kudo, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Feb. 5, 1979, Ser. No. 9,556
Int. Cl.³ G04B *19/24*; G09F *9/00*
U.S. Cl. 368—29 **13 Claims**



1. An electronic timepiece including:

timekeeping means for generating timekeeping data and calendar data indicative of the present month and day;

means for storing data representative of calendar month;

display means for visibily presenting said timekeeping and calendar data;

control means for selecting data for presentation by said display means, whereby data identifying present month and day is displayed by said display means, or in the alternative, data of calendar months is selectively displayed, showing simultaneously all days of a selected month;

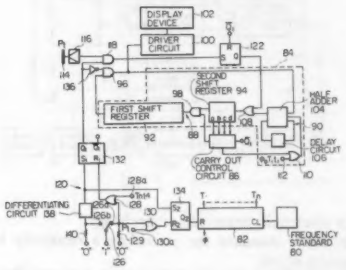
means for uniquely indicating special dates when said calendar months are displayed, all special dates in a selected month being simultaneously and uniquely indicated, said control means being adapted to modify the display of said selected calendar month whereby any number of special dates are entered or erased from any selected calendar month display by the performance of external operations by the user of said timepiece, said modification of said display causing only a first portion to be displayed of the dates in the calendar month while a second portion of said calendar dates is not displayed, said second portion being subsequent to said first portion of dates.

4,270,193

ELECTRONIC TIMEPIECE

Singo Ichikawa, Sayama, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

Division of Ser. No. 726,014, Sep. 22, 1976, Pat. No. 4,147,022.
This application Apr. 2, 1979, Ser. No. 28,012
Claims priority, application Japan, Dec. 24, 1975, 50-154318
The portion of the term of this patent subsequent to Apr. 3, 1996, has been disclaimed.
Int. Cl.³ G04C *11/02*
U.S. Cl. 368—47 **4 Claims**



1. An electronic timepiece having detecting means adapted to receive correction pulses transmitted as current time data from a standard timepiece, comprising:

a frequency standard providing a relatively high frequency signal;

a frequency converter responsive to said relatively high frequency signal for providing a relatively low frequency signal, timing signals and a train of clock pulses;

a timekeeping circuit including a first shift register, a second shift register, and a serial adder circuit connected in series to constitute a shift register ring in which timekeeping data are cyclically shifted in response to said timing signals;

correction switch means normally held in a non-correction state and selectively operable to assume a correction state to provide an input signal;

means for generating a control pulse in response to said input signal;

means for generating a control signal in response to said control pulse;

inhibiting gate means normally opened in the absence of said control signal to effect shifting of said timekeeping data in said shift register ring and inhibited in the presence of said control signal;

writing-in gate means coupled to said shift register ring;

control gate means connected to said detecting means and adapted to be opened in response to said control signal to pass said correction pulses therethrough;

said writing-in gate means being responsive to said correction pulses to correct said time-keeping data to coincide with said current time data;

a driver circuit responsive to said timekeeping data to provide drive signals; and

display means for providing a display of said current time data in response to said drive signals.

4,270,194
ELECTRONIC ALARM TIMEPIECE

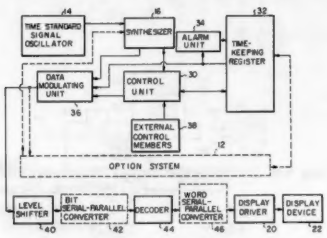
Shigeru Morokawa, Higashiyamato; Fukuo Sekiya, Tokorozawa; Yukio Hashimoto, Ishigami-Niiza; Yasushi Nomura, and Keiichiro Koga, both of Tokorozawa, all of Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Division of Ser. No. 626,791, Oct. 29, 1975, Pat. No. 4,150,535. This application Sep. 15, 1978, Ser. No. 943,261

Claims priority, application Japan, Oct. 31, 1974, 49/125801

Int. Cl.[3] G04B *23/02*; G04C *21/16*

U.S. Cl. 368—73 **24 Claims**



1. An electronic timepiece comprising:

a frequency standard for providing a relatively high frequency signal;

a frequency converter responsive to said relatively high frequency signal for providing a relatively low frequency time unit signal, timing signals, and a plurality of word pulses indicative of data words representing time data concerning current time and additional data concerning at least a single alarm time;

timekeeping register means for storing said time data and said additional data;

means for periodically updating said current time data in response to said time unit signal;

data altering means for altering the data contents of said timekeeping register means

display means responsive to an output of said timekeeping register means and including a plurality of display elements operable to display said current time data and at least a portion of said additional data;

means for generating an alarm data erasing signal, said data altering means being responsive to said alarm data erasing signal for automatically erasing at least a part of said additional data in said timekeeping register; and

erasure prevention means for preventing an erasing signal from being generated by said alarm data erasing signal generating means.

4,270,195
ALARM SETTING INDICATION DEVICE FOR DIGITAL CLOCK

Masuo Ogihara; Kozo Chimura; Nobuo Shinozaki, and Yoichi Seki, all of Shikawatashi, Japan, assignors to Seiko Koki Kabushiki Kasiha, Tokyo, Japan

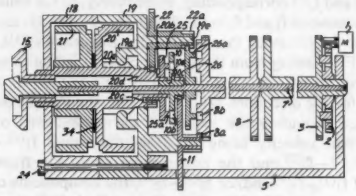
Filed Jan. 15, 1980, Ser. No. 112,183

Claims priority, application Japan, Feb. 27, 1979, 54-22337

Int. Cl.[3] G04B *23/02, 19/20*

U.S. Cl. 368—74 **10 Claims**

1. An alarm setting indication device for a digital clock having an alarm device, a first drum having thereon figures for indicating the hour unit of alarm time, and a second drum having thereon figures for indicating the minute unit of alarm time, said indication device comprising: a setting indication plate provided with a shutter; means for setting and stopping operation of said alarm device; and indication plate positioning means, cooperative with said means for setting and stopping operation of said alarm device, for positioning said plate shutter to cover the figures on said first and second drums when operation of said alarm device is stopped and for positioning



said plate shutter to uncover the figures on said first and second drums when said alarm device is set for operation.

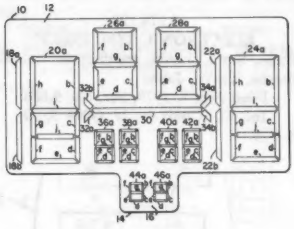
4,270,196
BALANCED COMPLEMENTARY DIGITAL TIME DISPLAYS

Berj A. Terzian, 66 Hirst Rd., Briarcliff Manor, N.Y. 10510

Continuation-in-part of Ser. No. 861,115, Dec. 16, 1977, abandoned. This application Mar. 6, 1979, Ser. No. 17,931

Int. Cl.[3] G04C *19/00*

U.S. Cl. 368—82 **43 Claims**



27. A method as in claim **22**, **23**, **24**, **25** or **26** which further includes the steps of displaying digit values of seconds increasing in value from zero to thirty during the first half of each present minute and decreasing in value from twenty-nine to zero during the second half of the same minute.

4,270,197
ANALOG DISPLAY ELECTRONIC STOPWATCH

Yoshiki Minowa, Suwa, Japan, assignor to Kubushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Apr. 17, 1979, Ser. No. 30,963

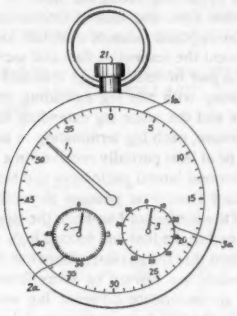
Claims priority, application Japan, Apr. 17, 1978, 53/44976

Int. Cl.[3] G04F *7/00, 8/00*

U.S. Cl. 368—102 **14 Claims**

1. An analog display electronic stopwatch comprising elapsed time measuring means including oscillator means for generaging a relatively high frequency time standard signal, divider means for producing relatively low frequency timekeeping signals in a first selected time unit in response to said time standard signal, and counter means for producing a second elapsed time signal in a secondary time unit, said secondary time unit being a fraction of the first selected time unit, said second elapsed time signal being produced at the same time as said high frequency time standard signal is being divided, first hand means including at least one first hand for indicating elapsed time in the selected time unit during time measurement in response to said first selected time unit signals and secondary hand means for indicating time in said secondary time unit after

completion of time measurement in said first selected time unit in response to said second elapsed time signal of said counter



means and driving means coupled to said counter means for driving said first and secondary hand means.

4,270,198

ELECTRONIC TIMEPIECE

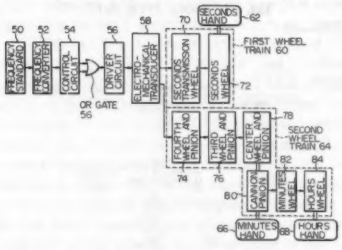
Munetaka Tamura, No. 32-18, 2-Chome, Igusa, Suginami-ku, Tokyo, and Toshikazu Hatuse, No. 23-10, 4-Chome, Shibakubo-cho, Tanashi-shi, Tokyo, both of Japan

Continuation-in-part of Ser. No. 862,141, Dec. 19, 1977, abandoned. This application Oct. 12, 1979, Ser. No. 84,127

Claims priority, application Japan, Dec. 22, 1976, 51-154773; Jan. 11, 1977, 52-1783

Int. Cl.[3] **G04B** *19/02;* **G04C** *3/00, 5/00, 19/00*

U.S. Cl. 368—220 **9 Claims**



1. In an electronic timepiece having a frequency standard for providing a relatively high frequency signal, a frequency converter for providing a low frequency time unit signal in response to the relatively high frequency signal, a control circuit responsive to the time unit signal to provide first and second output signals, and a driver circuit responsive to said first and second output signals to provide first and second drive signals, the improvement comprising:

a single reversible electro-mechanical transducer driveable in a clockwise direction and in a counter-clockwise direction in response to said first and second drive signals respectively;

first time-indicating hand means for indicating time;

second time-indicating hand means for indicating time;

a first wheel train driven by said electro-mechanical transducer during clockwise rotation thereof to actuate said first time indicating hand means; and

a second wheel train independent of said first wheel train and driven by said electro-mechanical transducer during counter-clockwise rotation thereof to actuate said second time indicating hand means.

4,270,199

SWITCHING MECHANISM FOR ELECTRONIC WRISTWATCH

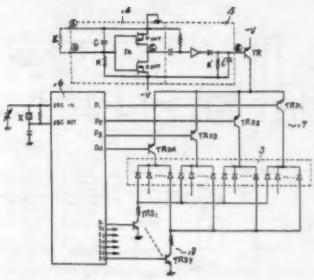
Tukehiko Sasaki, Yamatokoriyama, and Hidetoshi Maeda, Tenri, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 575,731, May 8, 1975, abandoned. This application Dec. 27, 1977, Ser. No. 864,802

Claims priority, application Japan, May 8, 1974, 49-51456; Jul. 4, 1974, 49-77029

Int. Cl.[3] **G04B** *19/00*

U.S. Cl. 368—224 **7 Claims**



1. A touch-sensitive electronic switching circuit for an electronic wristwatch comprising:

a C-MOS inverter circuit having a gate terminal and two power supply terminals;

a power source connected across said power supply terminals;

resistance means connected between said gate terminal and one of said supply terminals for maintaining the input level at said gate at approximately the same potential level of said one supply terminal;

a first touch-sensitive electrode connected to the other said power supply terminal;

another touch-sensitive electrode connected to said gate terminal;

wherein said another touch-sensitive electrode comprises a conductive watch casing for engaging the body skin of a wearer, said casing being conductively connected to said gate terminal;

wherein said casing includes a crystal isolated from the body skin of a wearer; and

wherein said first touch-sensitive electrode comprises a transparent conductive coating on said crystal electrically isolated from said conductive casing and selectively connected thereto through the body resistance of a wearer by engagement with the skin of said wearer, thereby dividing the potential of said one supply terminal through said body resistance and said resistance means and applying said divided potential to said gate terminal.

4,270,200

TIMED CHIME SYSTEM

Helmut Stechmann, and Jens Haberer, both of Schwenningen, Fed. Rep. of Germany, assignors to Kienzle Uhrenfabriken GmbH, Schwenninen, Fed. Rep. of Germany

Filed Dec. 4, 1978, Ser. No. 966,189

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1977, 2753733

Int. Cl.[3] **G04C** *21/16*

U.S. Cl. 368—252 **10 Claims**

1. A timed chime apparatus for transmitting at least one audio signal corresponding to a time condition of a clock, comprising:

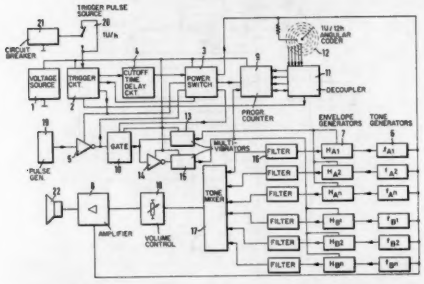
trigger means responsive to a periodic set trigger signal to

generate a corresponding chime initiation signal and responsive to a reset signal to generate a block signal,

coder means coupled to said clock for generating a count signal corresponding to the hour registration of said clock,

decoupler means coupled to said coder means for generating a count condition corresponding to said count signal and for generating said reset signal in response to a zero count condition,

counter means coupled to said decoupler means for registering said count condition from said decoupler means and adapted to be decremented to reduce the count in said counter means to said zero count condition thereby to cause said decoupler means to generate said reset signal,



timing pulse means for generating a plurality of control timing pulses in response to said chime initiation signal, said timing pulse means being operative to decrement said counter means upon occurrence of each control timing pulse and being responsive to said block signal to stop the generation of said control timing pulses,

electronic frequency generator means responsive to each of said control timing pulses to generate a corresponding audio chime signal,

power switch means responsive to said chime initiation signal for energizing said frequency generator means,

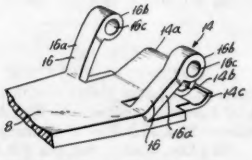
and delay means for receiving said block signal and responsive thereto for operating said power switch means to de-energize said frequency generator means after a particular time delay.

4,270,201

WATCH STRAP WITH ADJUSTABLE ATTACHMENT END

Bernard Pyne; Reginald W. H. Gray, both of Middlesex, and Peter R. Barber, Surrey, all of England, assignors to Timex Corporation, Waterbury, Conn.

Filed Dec. 31, 1979, Ser. No. 108,898
Int. Cl.³ G04B 37/00
U.S. Cl. 368—282 **6 Claims**



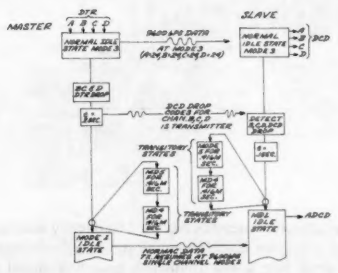
2. A watch strap useful with a connector bar for attachment between the spaced first and second lugs of a watchcase and having a bottom surface facing a wearer's wrist, said watch strap including an attachment end adapted to fit between the spaced lugs and to be adjustable in width to accommodate different lug spacings, said attachment end comprising a full loop portion defining a transverse passage to receive an intermediate portion of the connector bar, first and second upper loop extensions projecting from the sides of said full loop portion to provide first and second lateral enclosures with open bottoms on opposite sides of said full loop portion for positioning adjacent the respective first and second lugs of the watchcase, and a pair of resilient legs attached to the bottom surface of the strap with one leg extending toward the first lateral enclosure and the other leg extending toward the second lateral enclosure, each leg terminating in an auxiliary full loop adapted to be at least partially received in a respective one of the first and second lateral enclosures and being adapted to define an auxiliary transverse passage to receive one of the opposite ends of the connector bar when the strap and connector bar are attached to the first and second lugs, said legs being sufficiently resilient that the auxiliary loops can each be moved along the connector bar toward or away from the first and second lugs to accommodate different lug spacings and, in conjunction with the full loop portion and first and second upper loop extensions, hide the connector bar from view.

4,270,202

MODEM WITH AUTOMATIC PORT RECONFIGURATION APPARATUS

Edward B. Stuttard; John E. Blackwell, both of Reading, England, and Jessie Chao, Miami, Fla., assignors to Racal-Milgo, Inc., Miami, Fla.

Continuation of Ser. No. 795,876, May 11, 1977, abandoned.
This application Feb. 1, 1979, Ser. No. 8,511
Int. Cl.³ H04J 3/16, 6/02
U.S. Cl. 370—80 **22 Claims**



1. In a multiple port data modem having a communication channel per port adapted to receive one of a plurality of channel requests from associated equipment, apparatus for reconfiguring the channel-port assignments, comprising:

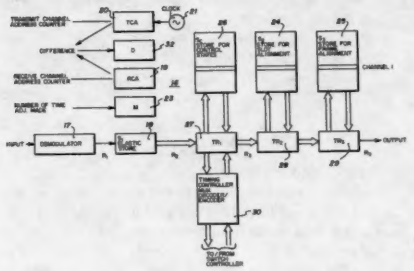
means for multiplexing a plurality of channels in one of a plurality of configurations, wherein said channels have a priority order of 1 to N with 1 being the highest priority, and the number of multiplexing configurations are N with a priority order of 1 to N, said means being responsive to first control signals for selecting the particular channel configuration to be adopted; and

means for detecting new channel request signals supplied by said associated equipment and generating control signals to said multiplexing means to switch said multiplexing means to a new channel configuration wherein the lowest priority channel present in the channel configuration requested by the channel request signal is active.

4,270,203
TIMING ADJUSTMENT CIRCUIT FOR DIGITAL SWITCHING

Arthur A. Collins; Jon W. Bayless, Sr., and Robert D. Pedersen, all of Dallas, Tex., assignors to Arthur A. Collins, Inc., Dallas, Tex.

Filed Nov. 13, 1978, Ser. No. 959,900
Int. Cl.[3] H04J 3/07
U.S. Cl. 370—102 12 Claims



1. Slip free digital switching of a plurality of multiplexed digital data streams where each said stream is composed of c multiplexed communication channels and where each said multiplex stream may have a different clock rate R1, R2 . . . Rc all of which may be different from the switch clock rate comprising the steps of

(a) inserting a variable length timing code, one bit at at time, in each of said c channels in each multiplexed digital data stream wherein said multi-bit timing code is composed of successive variable length code words of length L and L+1 with the first L bits of each code word designating whether the code word length is L or L+1 bits,

(b) adjusting individual channel rates in each of said c channels in each of said multiplexed data streams by altering the length of said variable length code words making variable length code words of length L equal to code words of length L+1 where the input clock is slower than the switch clock and making input code words of length L+1 equal to code words of length L where the input clock is faster than the switch clock thereby equalizing the respective clock rates by the adjustment of just a sufficient set of said code words in each of said channels to result in equal rates,

(c) storing incoming bits of said multiplex data stream under control of the incoming clock rate and reading said bits under control of said switch clock thereby aligning bit timing with switch clock timing,

(d) sensing clock rate differences for control of channel timing adjustments to compensate for said clock rate differences,

(e) aligning slots for each of the individual c channels by storing up to b bits per channel, with excess bits of each channel stored in a slot alignment store when addition of timing adjustment bits results in b+1 bit channel word lengths, and reading previously stored bits from said slot alignment stored to yield b bit words for transmission when timing bits are deleted from a multiplex channel,

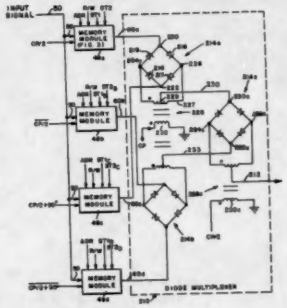
(f) aligning frames by storing b bit data words for each channel after slot alignment with successive words read from said slot alignment store in synchronism with switch clock frame alignment, and

(g) switching said data streams under the control of said clock of said switch.

4,270,204
MULTIPLEXER CIRCUIT

Bruce E. Gordon, Santa Barbara, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Dec. 22, 1978, Ser. No. 972,592
Int. Cl.[3] H04J 3/04
U.S. Cl. 370—112 5 Claims



1. A multiplexer circuit, comprising:

(a) a first means for producing a first logical signal;

(b) a second means for producing a second logical signal;

(c) a plurality of diodes serially coupled in like polarity to provide a closed loop electrical circuit, said electrical circuit having four junctions, first one of said diodes being coupled between a first one and a second one of said junctions, a second one of said diodes being coupled between the second one and a third one of said junctions, a third one of said diodes being coupled between the third one and a fourth one of said junctions, and a fourth one of said diodes being coupled between the first one and the fourth one of said junctions, such first one of said junctions being connected to the first means and said third one of said junctions being connected to the second means; and

(d) coupling means, including a transformer having: a first winding having ends thereof connected to the second one and the fourth one of said junctions and having a tap between such ends; and a second winding inductively coupled to the first winding and fed by a control signal for electrically coupling the tap through the electrical circuit to either the first means or the second means selectively in accordance with the control signal.

4,270,205
SERIAL LINE COMMUNICATION SYSTEM

Wallace E. DeShon, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 27, 1979, Ser. No. 15,687
Int. Cl.[3] G06F 11/10, 11/14
U.S. Cl. 371—32 28 Claims

1. A method for increasing throughput for a communication system utilizing a serial communication line comprising the steps of:

transmitting a message on said serial communication line, at a prime baud rate, from a central station to a remote station;

automatically detecting the baud rate at which said message was transmitted and checking said message for errors at said remote station;

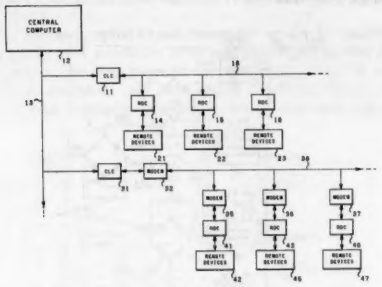
ignoring said message if said message contains at least a first predetermined number of errors;

completing the action required by said message if said message does not contain at least said first predetermined number of errors;

transmitting a reply message on said serial communication

line, at said prime baud rate, from said remote station to said central station if said message did not contain at least said first predetermined number of errors;

checking said reply message for errors at said central station; and



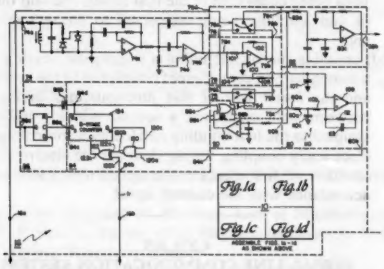
retransmitting said message on said serial communication line, at a secondary baud rate lower than said primary baud rate, from said central station to said remote station if said remote station did not reply to said message or if said reply message contained at least a second predetermined number of errors.

4,270,206

TRANSCEIVER FOR PHASE-SHIFT MODULATED CARRIER SIGNALS

William C. Hughes, Scotta, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 25, 1980, Ser. No. 124,347
Int. Cl.³ H04L *27/18*
U.S. Cl. 375—9 **30 Claims**



1. A transceiver for use in a system communicating digital data over a preselected transmission medium by phase-shift-modulation of a carrier waveform having a frequency related to the frequency of a system-wide waveform, comprising:

a transmitter section having an input receiving a clock frequency waveform, another input receiving a transmit clock waveform and an output, and including means for synthesizing a pseudo-bandpass-filtered waveform having said carrier frequency, responsive to receipt of said clock frequency waveform;

means receiving at least one bit of digital data to be transmitted for storing said data and for sequentially providing each successive data bit at an output thereof responsive to an associated one of successive portions of said transmit clock waveform;

means receiving the at least one data bit from said storing means output for modulating the phase shift of the carrier frequency waveform responsive to the digital value of the data bit to be then transmitted; and

means for amplifying the amplitude of the phase-shift-modulated, pseudo-bandpass-filtered carrier frequency waveform and coupling the amplified carrier waveform to said transmitter section output;

a receiver section having an received carrier input, a reference signal input and a recovered data output, said receiver section including means connected to said received carrier and reference signal inputs for providing a baseband data signal having each of a plurality of amplitude transitions thereof responsive to an associated reversal of the phase of the waveform of said received carrier;

means receiving said baseband data signal for generating a baud synchronization signal having periodic amplitude transitions synchronized to the transitions of said baseband data signal; and

means receiving said baud synchronization and baseband data signals for recovering the digital data modulated onto said received carrier waveform, and providing said recovered digital data at said receiver section recovered data output;

means for generating said transmit clock waveform with a preselected frequency and phase relationship to the waveform of said baud synchronization signal; and

a frequency synthesizer section having an input receiving said system-wide waveform and including means for generating said clock frequency waveform for said transmitter section; and

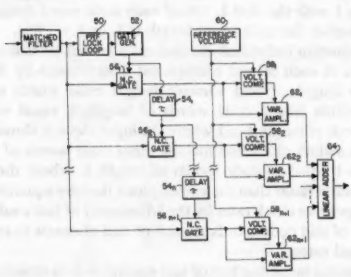
means for generating said reference signal for said receiver section.

4,270,207

COMBINED ECCM/DIVERSITY TROPOSPHERIC TRANSMISSION SYSTEM

Frank S. Gutleber, Little Silver, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 6, 1979, Ser. No. 64,161
Int. Cl.³ H03H *7/28*; H04B *15/00*; H04K *1/00*
U.S. Cl. 375—40 **4 Claims**



1. A signal communications system of the type utilizing the troposphere as the communication medium, and provided with receiver and transmitter apparatus in which said transmitter apparatus comprises:

means for generating a pair of coded message information signals;

means for generating a timing reference signal; and

means for multiplexing said message information signals with said timing reference signal for communication of said message information at selected time intervals within a predetermined transmission period; said coded signal generating means generating a pair of coded signals which upon receipt and detection by a receiver apparatus in communication with said transmitter apparatus produces an output signal having an impulse autocorrelation function during its selected time interval in said predetermined transmisson period; and said receiver apparatus comprises:

a receiver coupled to said transmitter, a demultiplexer coupled to said receiver, and a matched filter autocorrelation

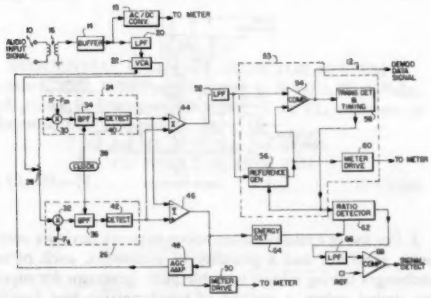
detector coupled to said demultiplexer to provide said output signal, said matched filter autocorrelation detector including a pair of adder circuits, a plurality of time delay circuits for successively delaying the application of received coded pulses to input terminals of said adders by one interval of time each, a plurality of phase control circuits for reversing the polarities of selected code pulses applied at said input terminals in accordance with the predetermined code patterns of said coded pulses, a common adder circuit connected to said pair of adder circuits to provide an output signal, and a diversity receiver maximal ratio combiner coupled to said output signal of said matched filter autocorrelation detector for extracting signal returns from the tropospheric medium at increased signal-to-noise power ratio, said diversity receiver including a narrowband pulse repetition frequency lock loop for synchronizing to the transmitted information bit, a gate generator connected to said lock loop for providing a gating signal of pulse width equal to the width of the individual noise code bits, delay means for progressively delaying said gating signal by increments of bit width and extracting uncorrelated multipath returns, a plurality of normally closed gates receiving said matched filter output signal and said gating signal, a plurality of voltage comparators and adjustable amplitude control circuits connected with the output of respective noramlly closed gates, the output of said voltage comparators being connected as a further input to said amplitude control circuits, a source of reference voltage connected to said voltage comparators, and a linear adder circuits coupled to the outputs of said amplitude control circuits to provide a combined output proportional to the strength of the individually adjusted signals from said amplitude control circuits.

4,270,208

THRESHOLD GENERATOR

Kenneth R. MacDavid, Fairport, N.Y., assignor to Harris Corporation, Melbourne, Fla.

Filed Apr. 2, 1979, Ser. No. 26,050
Int. Cl.³ H04L *25/06*
U.S. Cl. 375—76 **16 Claims**



12. A method for generating a reference signal in dependence upon the quality of a composite signal which varies between two amplitude levels, comprising the steps of:

detecting transitions in a composite signal between first and second amplitude levels;

sampling said composite signal for a predetermined time interval after a predetermined time after the detection of a transition from said second to said first amplitude level and storing the value of said first sample;

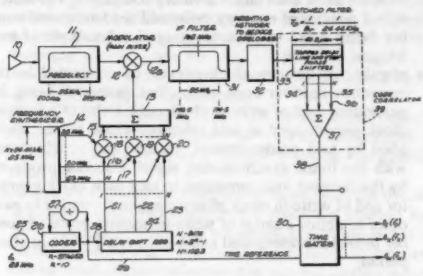
sampling said composite signal for a predetermined time interval after a predetermined time after the detection of a transition from said first to said second amplitude level and storing the value of said second sample; and combining the stored values to form a reference signal.

4,270,209

DIGITAL COMPRESSIVE RECEIVER

Damian F. Albanese, Chatsworth, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 7, 1979, Ser. No. 101,259
Int. Cl.³ H03H *15/00*; H03K *3/84*
U.S. Cl. 375—96 **12 Claims**



1. A compressive surveillance receiver, comprising:

frequency synthesizing means for generating a composite local oscillator signal including N discrete signal uniformly spaced in frequency;

first means for generating a repetitive digitally coded sequence having N bits;

second means responsive to said first means for providing N outputs, said coded sequence appearing at each of said N outputs in a delayed series whereby said coded sequence is extant at each successive output of said series delayed by one bit as compared to the preceding output in said series;

third means for modulating each of said N discrete local oscillator signals by said coded sequence extant at a corresponding one of said N outputs of said second means to provide N modulated outputs;

mixer means responsive to received input signals in a band of surveillance and to said third means outputs for converting said received input signals to signals in the intermediate frequency domain;

and means comprising a matched filter responsive to said intermediate frequency signals for correlating all coded sequence modulated intermediate frequency signals extant at the output of said mixer and corresponding to said received input signals to provide output pulses at times which are a function of the corresponding delay of the coded sequence modulated onto each corresponding local oscillator signal generated by said frequency synthesizer.

4,270,210

DIGITAL DIVERSITY RECEIVER, COMPRISING AN APC LOOP FOR LOCKING INSTANTS OF READ-OUT OF BUFFER MEMORIES TO AN AVERAGED PHASE OF SIGNALS SUPPLIED THERETO

Yoichi Tan, and Seiichi Noda, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

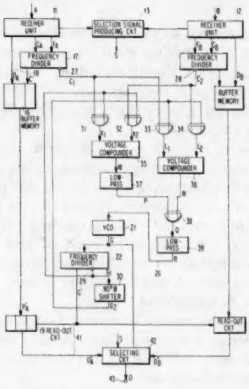
Filed Dec. 19, 1979, Ser. No. 105,172
Claims priority, application Japan, Dec. 26, 1978, 53/162424
Int. Cl.³ H04B *7/08*
U.S. Cl. 375—100 **3 Claims**

1. A digital signal combining circuit for use in a digital diversity receiver for deriving a receiver output signal from a plurality of route signals received thereby, said diversity receiver comprising a plurality of receiver units for receiving the respective route signals and a selection signal producing circuit connected to said receiver units for producing a selection

signal indicative of one of said route signals that is least subjected to fading of said route signals, each receiver unit deriving a clock pulse sequence of a reference clock period, a sequence of route digital signals variable at said reference clock period in compliance with the route signal received by said each receiver unit, and a frame synchronizing signal sequence of a frame period equal to an even integral multiple of said reference clock period from the last-mentioned route signal to produce said sequences, said combining circuit being for connection to said receiver units and said selection signal producing circuit and including;

a plurality of buffer memories connected to the respective receiver units, each buffer memory comprising a predetermined number of memory cells, said predetermined number being equal to an even integral submultiple of said integral multiple;

a plurality of write-in clock generators connected to the respective receiver units, each clock generator being for generating a set of write-in clock pulse trains of a write-in clock period equal to said reference clock period multiplied by said predetermined number and synchronized with the frame synchronizing signal sequence produced by the receiver unit connected to said each clock generator and of write-in clock phases staggered relative to each other to define a series of write-in instants, equal in number to said predetermined number, in every write-in clock period;



write-in means connected to each write-in clock generator, the receiver unit connected to said each write-in clock generator, and the memory cells of the buffer memory connected to the last-mentioned receiver unit for writing the digital signals of the digital signal sequences produced by the last-mentioned receiver unit cyclically in the last-mentioned memory cells at the respective write-in instants defined by the write-in clock pulse trains generated by said write-in clock generator, the last-mentioned memory cells thereby producing a plurality of those memorized digital signal trains, respectively, which comprise memorized digital signals variable at said write-in clock period and into which the last-mentioned digital signal sequence is divided with the route digital signals thereof converted to said memorized digital signals, respectively;

a plurality of read-out circuits connected to the respective buffer memories, each read-out circuit comprising a plurality of read-out units for receiving the memorized digital signal trains from the respective memory cells of the buffer memory connected to said each read-out circuit;

a voltage controlled oscillator for generating a local clock pulse train of a local clock period substantially equal to said reference clock period and of a controllable local clock phase; and

a read-out clock generator connected to said voltage controlled oscillator for frequency dividing said local clock pulse train by said predetermined number to generate a set of read-out clock pulse trains of a read-out clock period and of read-out clock phases staggered relative to each other to define a series of read-out instants, equal in number to said predetermined number, in every read-out clock period;

wherein the improvement comprises:

phase difference averaging means connected to predetermined ones of said receiver units and said write-in clock generators for averaging the phase differences of the write-in clock pulse train sets generated by the respective write-in clock generators relative to said local clock phase to produce a result signal representative of an average of said phase difference;

control means connected to said phase difference averaging means and said voltage controlled oscillator for controlling said local clock phase in response to said result signal;

read-out means connected to each read-out circuit and said read-out clock generator for reading a train of read-out digital signals cyclically from the read-out units of said each read-out circuit, said read-out digital signals being those portions of the memorized digital signals received by the last-mentioned read-out units, respectively, which are specified by said read-out instants; and

selecting means connected to said selection signal producing circuit, said voltage controlled oscillator, and the read-out means connected to the respective read-out circuits for deriving said receiver output signal by selecting, with reference to said selection signal and said local clock pulse train, one of the read-out digital signal trains read out of the respective read-out circuits.

4,270,211

SYSTEM FOR SYNCHRONIZING EXCHANGES OF A TELECOMMUNICATIONS NETWORK

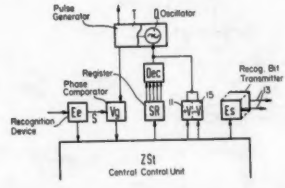
Max Schlichte, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 25, 1978, Ser. No. 945,565

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1977, 2743252

Int. Cl.³ H03K *1/17*

U.S. Cl. 375—107 **11 Claims**



1. For use in a telecommunications network having a central pulse generator and a plurality of exchanges, each of said exchanges having a local tuneable pulse generator for supplying timing pulses, a method of synchronizing said tuneable pulse generators, comprising the steps of:

determining when the difference in phase between a signal from said central pulse generator and a signal locally generated by a tuneable pulse generator exceeds a predetermined quantity,

subsequently changing the phase of the locally generated signal by applying a tuning voltage for rapidly correcting its phase to eliminate said phase difference,

determining the time interval between two successive occasions at which the difference in phase between the locally generated signal and the signal from the central pulse generator exceeds said quantity,

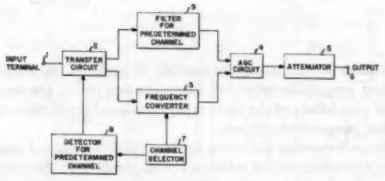
determining whether said time interval exceeds a predetermined interval,

and if said predetermined interval has not been exceeded, adjusting the frequency of said locally produced signal and thereafter maintaining the frequency of said locally produced signal as so adjusted until the next time the said predetermined interval is exceeded by said time interval.

4,270,212
CATV CONVERTER

Hajime Furukawa, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 11, 1979, Ser. No. 74,488
Claims priority, application Japan, Sep. 13, 1978, 53-112835
Int. Cl.[3] H04H *1/00*; H04B *1/18*
U.S. Cl. 455—3 **2 Claims**

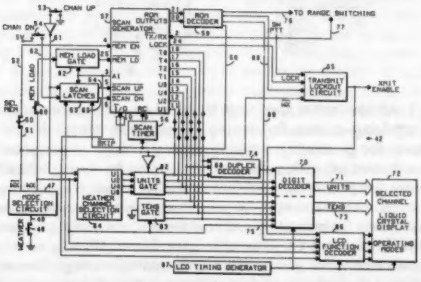


1. A CATV converter comprising a frequency converting circuit for converting the frequency of an input TV signal into a frequency of a predetermined channel, a filter provided in parallel with said frequency converting circuit to pass only signals of the same frequency as the frequency of said predetermined channel included in said input TV signal, a transfer circuit for transferring said input TV signal to either one of said frequency converting circuit or said filter to extract said predetermined channel, a channel selector, and means for detecting selection of said predetermined channel coupled to control said transfer circuit, whereby when said detecting means detects said selection of said predetermined channel, said transfer circuit transfers said input TV signal to said filter passing said predetermined channel, and when any other channel than said predetermined channel is selected, said transfer circuit transfers said input TV signal into said frequency converting circuit.

4,270,213
SEQUENTIAL CHANNEL SELECTOR SYSTEM

Terrence F. Falk, Villa Park; Terrence R. Schultz, Park Ridge, and James E. Hoffmann, Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 11, 1979, Ser. No. 47,385
Int. Cl.[3] H04B *1/40*; H03J *7/18*
U.S. Cl. 455—77 **11 Claims**



1. A channel selector system in a two-way radio for selecting one of a plurality of channels each having a different carrier wave frequency, said radio having a frequency synthesizer responsive to a channel selector to generate a predetermined frequency associated with each selected channel to enable said radio to receive information from the selected channel or to transmit information on the selected channel, said channel selector system comprising:

display means for displaying the selected channel;

sequential generating means for controlling said frequency synthesizer and causing said frequency synthesizer to sequentially access an adjacent channel of said plurality of channels, at least some of said plurality of channels being restricted for either reception, transmission, or both, said sequential generating means also providing a first predetermined output code for any channels which are restricted, and a second predetermined output code for any channels which are unrestricted;

decoding means responsive to the first output code from said sequential generating means to provide an output signal to indicate when a restricted channel has been sequentially accessed,

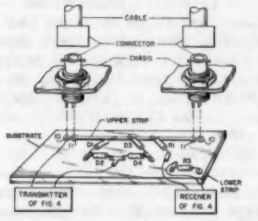
timer means responsive to the output signal from the decoding means when indicative that a restricted channel has been accessed to cause said sequential generating means to rapidly scan through any restricted channel to the next unrestricted channel whereby said channel display means does not visually display any restricted channels and gives the appearance that the restricted channels are skipped; and

latching means also responsive to the output signal from said decoding means to latch said sequential generating means during access of any restricted channel such that the sequential generating means continues to scan through any restricted channels at the rapid restricted scanning rate until the next unrestricted channel is accessed, said latching means further adapted to disable said channel selector during rapid scanning over restricted channels to prevent any subsequent change in channel selector input from accessing a restricted channel.

4,270,214
HIGH IMPEDANCE TAP FOR TAPPED BUS TRANSMISSION SYSTEMS

William W. Davis, Rosemount, and Ernest S. Griffith, St. Louis Park, both of Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Mar. 26, 1979, Ser. No. 23,795
Int. Cl.[3] H04B *1/48*
U.S. Cl. 455—80 **1 Claim**



1. Apparatus for passively coupling signals between a transceiver and a transmission line having at least a first and a second conductor and a characteristic impedance therebetween, comprising in combination:

a microstrip comprising:

a first and a second electrically conductive strip,

first and second connector means for connecting said first and second conductor to said respective first and second strips,

a dielectric substrate separating and insulating said first strip from said second strip, and

said first and second strips formed and arranged in combination with said connector means so as to exhibit substantially the same impedance characteristic as exhibited by said transmission line,

receiver coupling means mounted on said microstrip and connected, without inductive or capacitative coupling to said first and second strips and to a receiver section of said transceiver and having a high impedance characteristic with respect to said transmission line and said first and second strips for attenuating signals received from said transmission line and coupling the attenuated signals to said receiver section during receptions, comprising:

first voltage dividing means connected to a voltage source and having a first input and a second output terminal said first terminal connected to said first conductor and said second terminal connected to said receiver section for attenuating received signals via voltage division, and

second voltage dividing means connected to said voltage source having a third input and fourth output terminal, said third terminal connected to said second conductor and said fourth terminal to said receiver section for attenuating received signals via voltage division,

transmitter coupling means connected to said first and second strips and inductively coupled to a transmitter section of said transceiver and having a low impedance characteristic with respect to said transmission line during transmissions for conducting signals from said transmitter section to said transmission line during transmissions and not conducting signals during receptions, comprising;

first diode means mounted on said microstrip and having a fifth and a sixth terminal, said fifth terminal connected to said first strip, and a conductive threshold greater than the received signals for blocking received signals and conducting transmitted signals,

second diode means mounted on said microstrip and having a seventh and an eighth terminal, said seventh terminal connected to said first strip, and a conductive threshold greater than the received signals for blocking received signals and conducting transmitted signals, and

transformer means having a primary winding with ninth and tenth terminals and a secondary winding with eleventh and twelfth terminals, said ninth terminal connected to said sixth and eighth terminals, said tenth terminal connected to said second strip and said eleventh and twelfth terminals connected to said transmitter section for inductively coupling said transmitter section to said first and second diode means during receptions.

4,270,215
CHANNEL INDICATOR

Toshinori Murata, and Shigeo Matsuura, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 1, 1979, Ser. No. 35,101

Claims priority, application Japan, May 10, 1978, 53-5421; Jul. 7, 1978, 53-81982; Sep. 18, 1978, 53-114242

Int. Cl.³ H04B 1/26

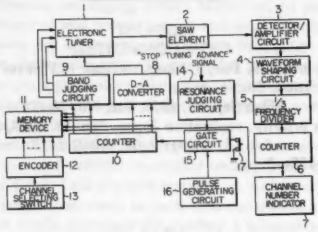
U.S. Cl. 455—158 **14 Claims**

1. A channel indicator comprising:

a voltage-controlled type electric tuner having sweeping means for generating a sweep voltage and a voltage-controlled type local oscillator for generating a sweeping local oscillation signal the frequency of which is varied in accordance with the sweep voltage supplied from said sweep means;

a comb-shaped surface acoustic wave filter coupled to the local oscillation signal, said filter having a multi-pass-band characteristic, the center frequencies of which pass-bands have predetermined frequency intervals therebetween, wherein said filter generates an output signal having peak values each of which corresponds to the passing of the local oscillation signal through each pass-band of said multi-band-pass characteristic of said comb-shaped surface acoustic wave filter;

means for amplitude-detecting the output of said comb-shaped surface acoustic wave filter and producing an output having peaks corresponding to the peak values of said filter output signal;



a counter for counting the number of peaks in the output of said amplitude-detecting means to determine the number of pass-bands of the filter which the local oscillation signal has swept through; and

a channel number indicator for indicating a channel number in a predetermined relation corresponding to the counted result of said counter.

4,270,216
TUNING AND VOLUME INDICATOR

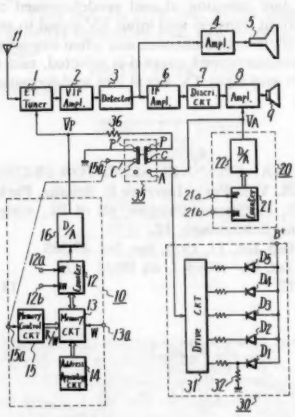
Tadahiko Suzuki, Yokohama, and Yasunari Ikeda, Funabashi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 13, 1979, Ser. No. 75,491

Claims priority, application Japan, Sep. 19, 1978, 53-128488[U]

Int. Cl.³ H04B 1/16

U.S. Cl. 455—159 **7 Claims**



1. An electronic apparatus included in a television receiver, comprising means for tuning a television signal including means for generating a tuning control voltage corresponding to a desired television channel, said means for tuning including means for presetting a television signal, means for selecting a television signal, means for selectively operating alternatively said means for presetting and said means for selecting; an audio amplifier having an adjustable gain for amplifying an audio signal; means for generating a gain control voltage for establishing a desired gain of said audio amplifier; display means for displaying said gain control voltage; and means for alterna-

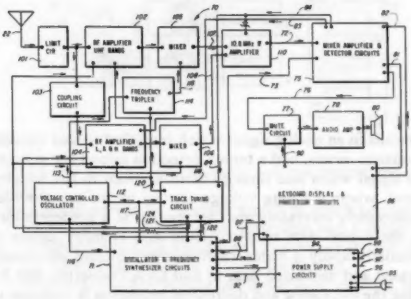
tively applying said tuning control voltage to said display means in place of said gain control voltage, said means for alternatively applying being responsive to operation of said means for presetting to display said tuning control voltage and being further responsive to operation of said means for selecting to display said gain control voltage.

4,270,217

PROCESSOR CONTROLLED, SERVICE SELECTING, AM/FM SCANNING RADIO RECEIVER

William Baker, Indianapolis, Ind., assignor to Masco Corporation, Cumberland, Ind.

Filed Apr. 30, 1979, Ser. No. 34,738
Int. Cl.³ H03J 7/18
U.S. Cl. 455—165 **17 Claims**



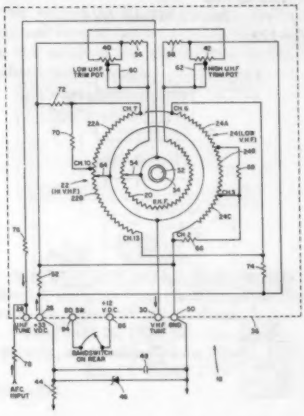
1. In a scanning radio receiver for reception in a frequency range including at least one service group of frequency channels allocated to a prescribed type of service usage, and including mixer means, frequency synthesizer means for generating and applying a local oscillator signal to said mixer means for mixing with a received modulated signal to develop a modulated IF signal at a certain IF frequency, said frequency synthesizer means being digitally controlled and being responsive to applied frequency codes to develop a local oscillator frequency for reception of a signal at a frequency corresponding to an applied frequency code. IF amplifier means for amplifying said IF signal, demodulator means for demodulating the amplified IF signal to produce an audio signal, signal-present means connected to said demodulator means for output of a signal-present signal in response to reception of a signal at a frequency determined by said local oscillator frequency and said IF frequency, keyboard means for supplying control data and including at least one service key operable by a user to signify selection of a certain service group of frequency channels for scanning, data storage means for storing of data including service group identification data identifying said certain service group of frequency channels, frequency code generating means for processing control data from said keyboard means and stored data from said data storage means for developing a frequency code for control of said frequency synthesizer means, frequency code output means for output of said frequency code from said frequency code generating means to said frequency synthesizer means, timer means for establishing a time interval for said frequency synthesizer means to adjust to a new frequency, and program means operable in response to data from said signal-present means, said keyboard means and said timer means to effect a scanning operation in which a series of frequency codes are output sequentially from said frequency code output means with said scanning operation being interrupted when and so long as a signal-present signal is produced by said signal-present means, said program means being operable in a service search mode in response to control data developed from operation of said service key and being then responsive to said service group identification data to effect scanning of said certain service group of frequency channels.

4,270,218

CONTINUOUS TUNE ALL-CHANNEL SELECTOR

Richard A. Smirl, Chicago, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Feb. 7, 1980, Ser. No. 119,348
Int. Cl.³ H04B 1/16
U.S. Cl. 455—176 **17 Claims**



1. A continuous tune, all-channel television selector system for providing tuning voltage signals to a variable frequency tuner having a plurality of tunable stages, wherein bandswitching is accomplished by selectively coupling a first DC potential source to said tunable stages, each of said VHF tunable stages including an abrupt junction-type varactor diode having a nonlinear frequency-to-tuning voltage characteristic and each of said UHF tunable stages including a hyper abrupt junction-type varactor diode having a frequency-to-tuning voltage characteristic which varies substantially from UHF tunable stage to UHF tunable stage, said channel selector system comprising:

a second DC potential source;

first continuously variable, contact resistor means coupling said second DC potential source to said varactor diodes in said VHF tunable stages, said first variable resistor means having a tapered, nonlinear contact position-to-output voltage characteristic which is complementary to the nonlinear frequency-to-tuning voltage characteristic of said VHF tunable stages, said complementary nonlinear characteristic producing a substantially linear first variable resistance means contact position-to-frequency characteristic;

second continuously variable, contact resistor means coupling said second DC potential source to said varactor diodes in said UHF tunable stages, said second variable resistor means having a substantially linear contact position-to-output voltage characteristic;

third and fourth continuously variable, contact resistor means coupled to the low resistance and high resistance ends, respectively, of said second contact resistor means for adjusting the low and high resistance values, respectively, of said second contact resistor means in normalizing said second contact resistor means to a predetermined UHF tunable stage frequency-to-tuning voltage characteristic variation; and

rotatable selector shaft means operatively coupled to said first and second continuously variable, contact resistor means for changing the voltage applied to said varactor diodes by means of said first and second resistor means in

tuning said tunable stages over the entire VHF and UHF television spectra, respectively.

4,270,219

CHANNEL SELECTION APPARATUS TUNABLE TO DESTINED FREQUENCY IN SHORT TIME

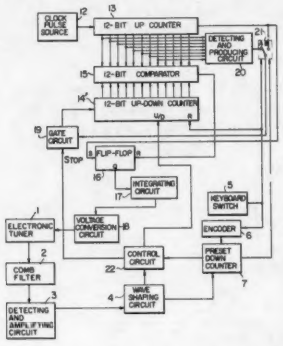
Toshinori Murata, and Shigeo Matsuura, both of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 13, 1978, Ser. No. 951,043

Claims priority, application Japan, Oct. 14, 1977, 52-122387; Oct. 21, 1977, 52-125736

Int. Cl.³ H04B 1/16

U.S. Cl. 455—179 **12 Claims**



1. A channel selection apparatus comprising:

an electronic tuner including a local oscillator for producing a local oscillation signal;

a comb filter for receiving said local oscillation signal and passing only those frequency components of said signal which lie within selected equi-spaced frequency ranges, the characteristics of said comb filter being such that a frequency band of a broadcast station corresponds to one of said equi-spaced frequency ranges;

means for detecting the output of said comb filter and generating at least one pulse in response thereto;

a preset down counter for counting the at least one pulse from said detecting means and producing a count completion signal when a preset count for said preset counter has been reached; and

means for sweeping the frequency of the local oscillation signal from said local oscillator, said local oscillation signal frequency sweeping means including means responsive to an actuation of the channel selection apparatus, for setting the rate of sweeping the local oscillation signal at a first rate, and responsive to said count completion signal from said preset down counter for setting said frequency sweeping rate at a second rate lower than the first rate, and means for producing a sweep control signal in response to the output of said means for setting the rate of sweeping the local oscillation signal frequency, said sweep control signal being fed to said electronic tuner.

4,270,220

ELECTRONIC TUNING TYPE TELEVISION RECEIVER

Yoshimune Hagiwara, Kodaira; Terumi Sawase, Hachioji; Atsushi Takai, Musashino; Yuzo Kita, Fuchu, and Akira Honda, Ome, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

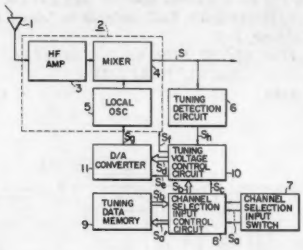
Filed Aug. 29, 1979, Ser. No. 70,817

Claims priority, application Japan, Sep. 1, 1978, 53-106212

Int. Cl.³ H04B 1/26

U.S. Cl. 455—182 **3 Claims**

1. An electronic tuning type television receiver comprising a tuning circuit including a local oscillator whose oscillation frequency is controlled to be variable depending on a voltage applied to a variable capacitance means, signal input means for specifying a selected channel, memory means for storing digital data indicative of tuning voltages corresponding to a plurality of channels respectively so that a tuning voltage corresponding to a selected channel can be applied to said variable capacitance means in said tuning circuit, means for reading out from said memory means the digital data corresponding to the selected channel specified by said signal input means, a D/A converter converting the digital data read out from said memory means to an analog signal which is applied to said variable capacitance means, and a tuning detection circuit for generating a signal when said tuning circuit is tuned to the selected channel, wherein tuning voltage control means are provided for alternately increasing and decreasing, at a predetermined rate, the digital data read out from said memory means to sequentially apply a signal representative of said alternately increased and decreased data to said D/A converter, and for ceasing the increasing and decreasing operation in response to the appearance of an output from said tuning detection circuit.



4,270,221

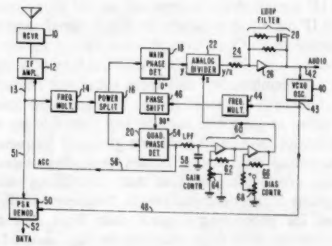
PHASELOCKED RECEIVER WITH ORDERWIRE CHANNEL

James W. Daniel, Jr., Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 17, 1979, Ser. No. 85,548

Int. Cl.³ H04B 1/16

U.S. Cl. 455—208 **5 Claims**



1. In a phaselocked radio receiver, a combination carrier extraction and FM orderwire de-emphasis system, comprising

a phaselocked loop including a voltage controlled oscillator having an output constituting a carrier extracted from a received data signal for use in demodulating the received data signal, a main phase detector receptive to the received data signal and the output of said oscillator, and a signal path from the output of said main phase detector to the control input of said oscillator and to an orderwire audio output, said signal path including a loop filter constructed to have a de-emphasis characteristic for an orderwire audio signal,

a quadrature phase detector receptive to the received data signal and a quadrature phase of the output of said oscilla-

tor and producing an output which varies with the signal-to-noise ratio of the received data signal, and

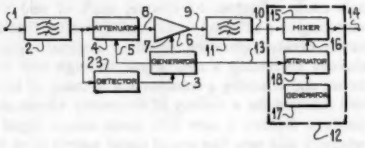
means responsive to the output of said quadrature phase detector to make the bandwidth of said phaselocked loop remain substantially constant despite changes in the signal-to-noise ratio of the received data signal.

4,270,222

RADIO-FREQUENCY HEAD HAVING A SELF-ADAPTIVE DYNAMIC RANGE

Christophe Menant, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 17, 1980, Ser. No. 131,181
Claims priority, application France, Mar. 20, 1979, 79 07012
Int. Cl.³ H04B 1/26
U.S. Cl. 455—236 **3 Claims**



1. An HF head having one input and one output and comprising:

a stage for converting received signals in which provision is made for a local oscillation generator and a mixer and which stage has one signal input, one output and one input for controlling the level of local oscillation;

a variable attenuator having one signal input coupled to the input of the HF head, one output coupled to the signal input of the converter stage, and one input for controlling its attenuation coefficient;

means having one input and one output for detecting the level of signals received;

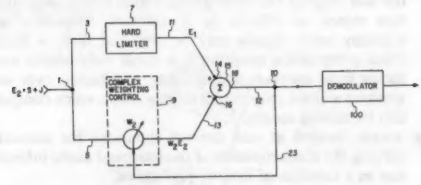
control means having one input coupled to the output of the detection means and at least one first output for delivering a first control signal, and one second output for delivering a second control signal, said first and second outputs being coupled respectively to the control inputs of the converter stage and of the attenuator in order to ensure that the level of the local oscillation current and the coefficient of attenuation of the attenuator between predetermined limiting values of the received signal level are of successively increasing value as a function of increasing received signal level.

4,270,223

SIGNAL NORMALIZER

Robert K. Marston, Plano, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 11, 1978, Ser. No. 968,340
Int. Cl.³ H04B 1/12
U.S. Cl. 455—305 **10 Claims**



1. A signal normalizer for a radio receiver comprising:

first circuit means for providing a first signal that results from removing essentially all AM components present on a received signal by the first circuit means, the AM component being the component present as a result of combining a desirable signal with an undesirable signal;

second circuit means for providing a second signal;

first arithmetic means for providing a third signal that results from an amplitude comparison of the first and second signals;

means for providing a received signal to said first and second circuit means; and

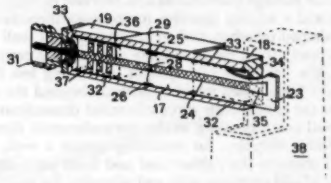
feedback path means for connecting the third signal to the second circuit means whereby the second circuit means in response to the received signal and the third signal provides the second signal, said first arithmetic means subtracting said second signal amplitude from the first signal which as a result of this subtraction the third signal is a normalized output signal.

4,270,224

MICROWAVE DOWN CONVERTER

Jacques Blondel, and Jean-Rene Mahieu, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 28, 1980, Ser. No. 125,700
Claims priority, application France, Mar. 1, 1979, 79 05345
Int. Cl.³ H04B 1/26
U.S. Cl. 455—327 **3 Claims**



1. A balanced down converter for millimetric waves delivering a signal at the beat frequency between an input signal and a signal from a local oscillator, comprising:

a parallelepipedic cavity having first and second opened opposite faces and a third opened face;

two parallelepipedic housings each of which has an opened face in alignment with one of said two opened opposite faces of said cavity;

a dielectric wafer serving as substrate for a stripline and passing through said cavity and said two housings, said wafer carrying a conducting strip used for serially connecting two diodes whose non-common electrodes are respectively connected to fourth and fifth opposite faces of said cavity, said strip defining first and second microstrip line sections extending respectively in each of said two housings, said first microstrip line section propagating the signal from the local oscillator towards said cavity, and said second microstrip line section transmitting the beat frequency signal towards an output;

an approximately flat wall parallel to said wafer and formed by a sixth face of said cavity opposite to said third opened face thereof, and by the corresponding faces of said two housings;

a flange positioned on said third opened face of said cavity; and

a guide section connected to said flange for propagating said input signal.

4,270,225
ELECTRICAL APPARATUS COMPRISING A REVERSIBLE FRONT PLATE

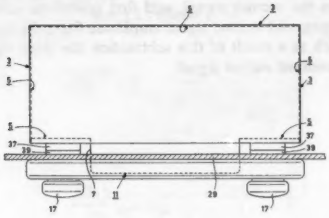
Bernardus W. J. Bentlage, and Geert Spakman, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 4, 1979, Ser. No. 36,275

Claims priority, application Netherlands, May 26, 1978, 7805727

Int. Cl.³ H04B *1/08*

U.S. Cl. 455—347 **1 Claim**



1. Electrical apparatus suitable either for building into a wall or for mounting against a wall, which comprises a substantially rectangular cabinet open on one side, an electrical device comprising a car radio accommodated in the cabinet, said electrical device having one or more control members and a substantially rectangular open box-shaped member both projecting outwardly through said open one side beyond the circumference of the cabinet, a cover plate closing the open box-shaped member, a front plate having one or more first openings for passage therethrough of said one or more control members and a second opening for passage therethrough of said box-shaped member, and an endless upright wall extending transversely from the front plate adjacent the periphery of the same, the height of said upright wall being less than the distance the box-shaped member projects beyond the circumference of the cabinet, the circumferential dimensions of said upright wall corresponding to the circumferential dimensions of the cabinet whereby, for mounting against a wall, the upright wall contacts the cabinet and said front plate closes the remainder of said open one side, and whereby, for building into a wall, the front plate is inverted whereby, the upright wall is directed outwardly to prevent light reflections.

4,270,226
REMOTE CONTROL SYSTEM

Morton Weintraub, 1542 47th St.; Elliot Waxman, 1825 50th St., and Bernard Gendelman, 1340 52nd St., all of, Brooklyn, N.Y. 11219

Continuation-in-part of Ser. No. 911,168, May 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 707,855, Jul. 22, 1976, abandoned. This application Mar. 19, 1979, Ser. No. 21,447

Int. Cl.³ H04B *1/16*

U.S. Cl. 455—353 **12 Claims**

1. Remote radio channel selection and plural function control apparatus comprising:

a. A tuner for receiving a radio signal including audio information modulated on a carrier on any one of a plurality of channels:

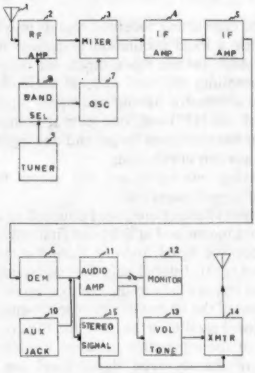
b. means located at said control apparatus for manually varying the channel selection of the tuner,

c. a demodulator connected to said tuner for providing said audio information in a baseband format,

d. means comprising of an auxiliary jack means and a magnetic pick up coil means located subsequent of the demodulator to facilitate the addition or mixing of an auxiliary intelligence signal into the incoming signal when it is in the baseband format,

e. means comprising of record/playback means connected between said auxiliary jack means and controls for selecting the mono bass, midrange, treble signals or other mono frequency range signals, separating said mono signals to a two or more channel stereo signal; for feeding said selected mono, midrange, bass signals or other frequency range signals, to one channel; for feeding a balanced input of all said signals to all channels; for feeding some of the said signals with a balanced input into all channels while some of the said signals are fed to one channel only; for feeding an unbalanced signal from some or all said selected signals to all channels; for delaying said selected signals from another of said selected signals so as to cause a resultant output from stereo channels whereby one of said frequency range signals will lead another of said frequency range signals by any desired delay level resulting in three or more signals, one emanating after another, from two or more channels,

f. means comprising vibration means, whereby musical signals cause vibrators to vibrate, each of said vibrators vibrating to a selected signal and thereafter feeding their newly created vibration signal to a signal input source thereby recreating a new signal through said vibration means and whereby a combination of many of said vibrators selected for a variety of frequency vibration ranges produce thereby a new live music sound signal source whereby said new live sound signal source does not stem



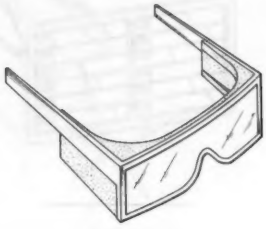
from the original electromagnetic baseband signal source but from vibrators vibrating as a result of said original electromagnetic baseband signal source, which said new signal may be placed mono or stereo, whereby all outputs of said vibration means are fed to a mono amplifier or separated into two branches to form a stereo output and to convert the frequency signals of said original electromagnetic signal emanating from one instrument. Whereby said signal acts to reproduce the said new live signal source of another instrument through said vibration means whereby the said original electromagnetic signal causes said vibration means to vibrate to a different frequency and whereby voice signals may be removed from a music-voice composition resulting in a music only output emanating from speakers and whereby producing over said speakers a voice only output from a music-voice composition by mixing means,

g. means located at said control apparatus for manually varying the characteristics of the baseband audio information as a function of listener preference,

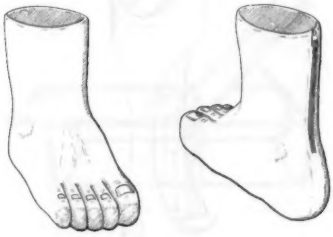
h. means for remodulating and transmitting electromagnetically the audio signal to a remotely located radio receiver on an unused channel via wireless transmission, and,

i. the remote control of both tuning and other receiver functions being effected without direct connection or modification to the receiver.

259,295
EYESHIELD FOR CHEMICAL TREATMENT OF HAIR
Vera Briggs, P.O. Box 8915, Dallas, Tex. 75216
Filed Mar. 20, 1978, Ser. No. 888,683
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—234



259,296
CHILD'S BOOT
Kerry Meyer, 1760 Harvard Ave., Salt Lake City, Utah 84108
Filed Aug. 18, 1977, Ser. No. 825,683
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—273

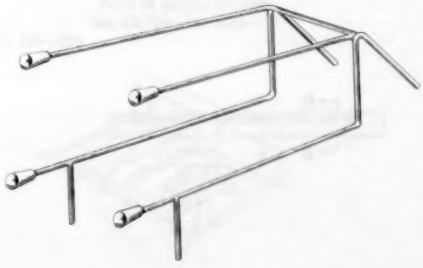


259,297
BOOT APPLIANCE
Michael J. Carey, 4045 Third Ave., San Diego, Calif. 92103
Filed Jun. 12, 1979, Ser. No. 47,941
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—317

259,298
SHOE SOLE
Joseph P. Famolare, Jr., Putney, Vt., assignor to Famolare, Inc., New York, N.Y.
Filed Aug. 6, 1979, Ser. No. 63,917
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—322

259,299
STOCKING REMOVING TOOL FOR THE HANDICAPPED OR SIMILAR ARTICLE
Richard Vreeken, 1276 Metz Rd., Perris, Calif. 92370
Filed Jan. 22, 1979, Ser. No. 5,154
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—378

259,300
STOCKING HOLDER FOR THE HANDICAPPED OR SIMILAR ARTICLE
Richard Vreeken, 1276 Metz Rd., Perris, Calif. 92370
Filed Jan. 22, 1979, Ser. No. 5,383
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—378

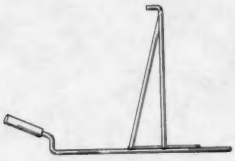


259,301

BOOT INSTALLATION AND REMOVAL DEVICE

J. Wayne Cowart, and Wayne J. Roberts, both of Woodward, Okla., assignors to Margaret Roberts, Woodward, Okla., by said J. Wayne Cowart

Filed Mar. 19, 1979, Ser. No. 21,920
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—378.2

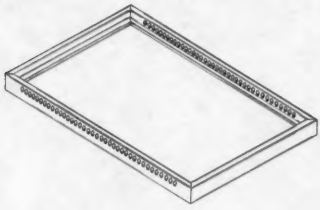


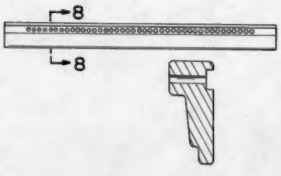
259,302

PORTABLE HAND WEAVING LOOM

P. Lynn Davis, Monte Sereno, Calif., assignor to Courtney Davis, Inc., Campbell, Calif.

Filed Dec. 11, 1978, Ser. No. 968,564
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D3—26



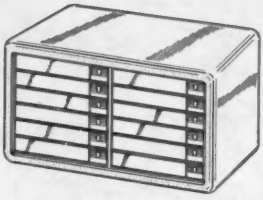


259,303

CONTAINER FOR TAPE CASSETTES

Peter Ackeret, Küsnacht, Switzerland, assignor to IDN Inventions and Development of Novelties AG, Chur, Switzerland

Filed Apr. 26, 1979, Ser. No. 34,019
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—35



259,304

BOOT AND SHOE HOLDER

Bryan Ball, 17 Northcote Rd., Hampstead, Quebec, Canada

Filed Apr. 4, 1979, Ser. No. 26,818
Term of patent 14 years
Int. Cl. D03—*02*
U.S. Cl. D3—36

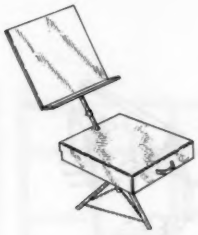
259,305

TOOTH BRUSH

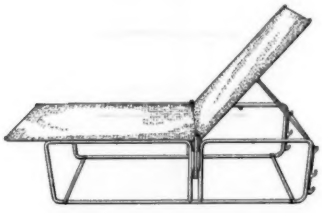
Kuo-Chu Wu, 3rd Fl. No. 8, Alley 2, La. 39, Chung Hsiao E. Rd., Sec. 2, Taipei, Taiwan

Filed Jun. 26, 1979, Ser. No. 52,184
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—25

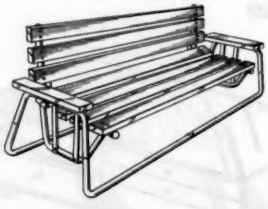
259,306
PORTABLE EASEL, SEAT AND CARRYING CASE COMBINATION
Joseph Licastro, II, 7329 Hooper Ave., Bakersfield, Calif. 93308
Filed Feb. 2, 1978, Ser. No. 874,568
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—17



259,307
SUN BENCH
Donald B. Colby, Los Angeles, Calif., assignor to Brown Jordan Company, Philadelphia, Pa.
Filed Oct. 2, 1978, Ser. No. 947,936
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—37

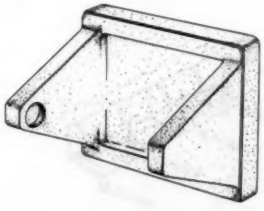


259,308
GLIDER
Joseph W. Sroub, Parma, Ohio, assignor to Cardinal American Corporation, Cleveland, Ohio
Filed Jan. 5, 1979, Ser. No. 1,183
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—52

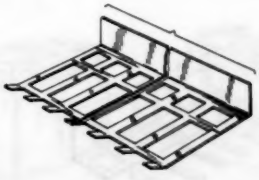


259,309
SEAT
Ira Friedman, Carmel, Calif., assignor to Rowe Furniture Corporation, Salem, Va.
Filed Jun. 30, 1978, Ser. No. 921,129
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—62

259,310
TOILET PAPER HOLDER
Douglas M. Crowe, Richmond Hill, Canada, assignor to Smith & Stone Limited, Toronto, Canada
Filed Aug. 7, 1979, Ser. No. 64,639
Claims priority, application Canada, Feb. 20, 1979, 20-02-79-6
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—97

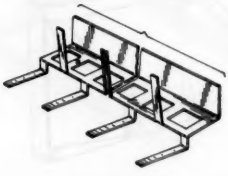


259,311
TOOL HOLDER
Sven P. Nordlund, Kåge, Sweden, assignor to Handelsbolaget Nordlunds Karosseriverkstad, Sven & Anna-Stina Nordlund, Kåge, Sweden
Filed Jun. 19, 1979, Ser. No. 49,982
Term of patent 14 years
Int. Cl. D6—*04*; D23—*02*
U.S. Cl. D6—125

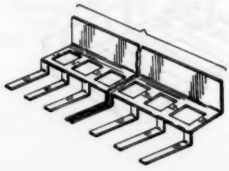


259,312
TOOL HOLDER
Sven P. Nordlund, Kåge, Sweden, assignor to Handelsbolaget Nordlunds Karosseriverkstad, Sven & Anna-Stina Nordlund, Kåge, Sweden
Filed Jun. 19, 1979, Ser. No. 50,090
Term of patent 14 years
Int. Cl. D6—*04;* D23—*02*
U.S. Cl. D6—125

259,313
TOOL HOLDER
Sven P. Nordlund, Kåge, Sweden, assignor to Handelsbolaget Nordlunds Karosseriverkstad, Sven & Anna-Stina Nordlund, Kåge, Sweden
Filed Jun. 19, 1979, Ser. No. 50,091
Term of patent 14 years
Int. Cl. D6—*04;* D23—*02*
U.S. Cl. D6—125

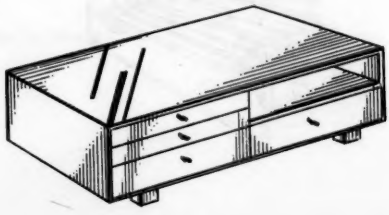


259,314
TOOL HOLDER
Sven P. Nordlund, Kåge, Sweden, assignor to Handelsbolaget Nordlunds Karosseriverkstad, Sven & Anna-Stina Nordlund, Kåge, Sweden
Filed Jun. 19, 1979, Ser. No. 50,092
Term of patent 14 years
Int. Cl. D6—*04;* D23—*02*
U.S. Cl. D6—125

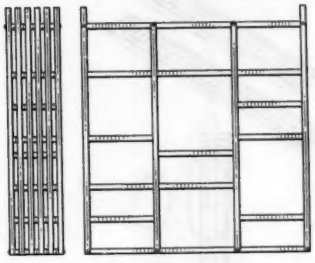


259,315
MULTI-UNIT BELT DISPLAY FIXTURE
Allan L. Ford, Melrose Park, and William A. Cole, Jenkintown, both of Pa., assignors to Reborn Products Co., Inc., Philadelphia, Pa.
Filed Jun. 4, 1979, Ser. No. 45,453
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—157

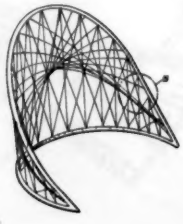
259,316
CABINET
Giovanni Offredi, Milan, Italy, assignor to Fratelli Saporiti, Besnate, Italy
Filed Oct. 31, 1977, Ser. No. 848,011
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—159



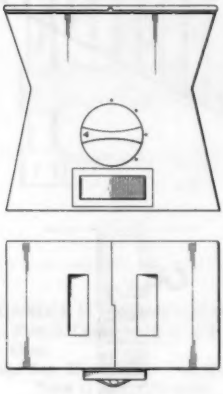
259,317
MODULAR SHELVING
Gerald M. Gilmore, 830 Kentucky, Lawrence, Kans. 66044
Filed Sep. 29, 1978, Ser. No. 947,246
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—186



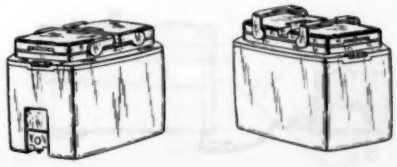
259,318
CHAIR BACK
Donald E. Hanaford, 4601 S. 35th St., Phoenix, Ariz. 85040
Filed Oct. 16, 1978, Ser. No. 951,469
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—197



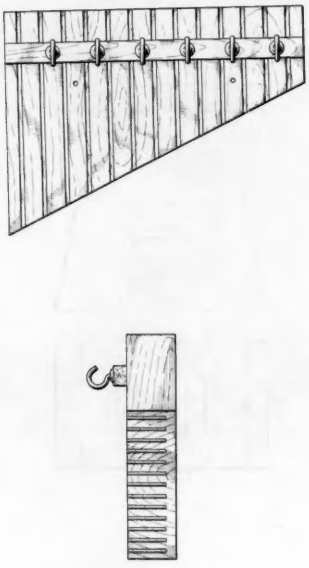
259,319
MEASURING DISPENSER FOR POWDERED OR GRANULAR MATERIALS
Salvatore D. Ciuffetti, Fitchburg, Mass., assignor to Product Development Associates, Pocasset, Mass.
Continuation-in-part of Ser. No. 732,581, Oct. 15, 1976, abandoned. This application Dec. 4, 1978, Ser. No. 966,473
Term of patent 14 years
Int. Cl. D07—*06*; D15—*08*
U.S. Cl. D7—50



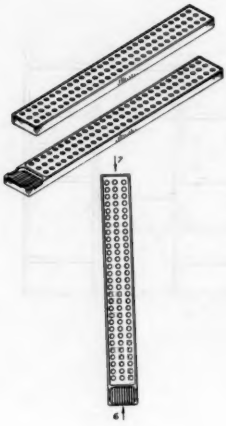
259,320
COMBINED FOOD AND BEVERAGE COOLER
Richard A. Tarozzi, Gales Ferry, Conn., assignor to King-Seeley Thermos Co., Norwich, Conn.
Filed Aug. 23, 1978, Ser. No. 936,012
Term of patent 14 years
Int. Cl. D07—*07*
U.S. Cl. D7—61



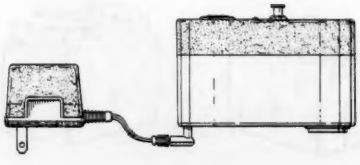
259,321
KNIFE RACK
Haywood M. Sparger, 358 Keller La., Marion, Va. 24354
Filed Nov. 16, 1978, Ser. No. 961,672
Term of patent 14 years
Int. Cl. D07—*07*
U.S. Cl. D7—74



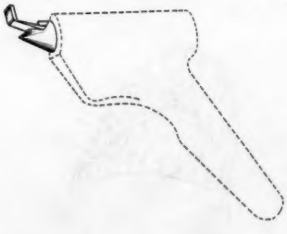
259,323
MAT FOR BEVERAGE CONTAINERS
Zigurds Galvins, 1425 Cherry Ave., Space 186, Beaumont, Calif. 92223
Filed Aug. 28, 1978, Ser. No. 937,080
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—188



259,322
ROTATOR PRIMARILY FOR A BARBECUE SPIT INCLUDING AN ELECTRICAL ADAPTOR THEREFOR
Philip W. L. Lau, Kowloon, Hong Kong, assignor to Landmann Limited, Hong Kong
Filed Nov. 30, 1978, Ser. No. 965,207
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—129

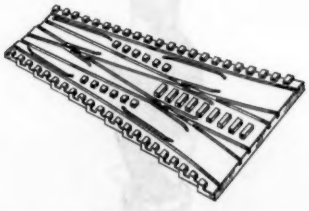


259,324
HEATED TIP FOR USE WITH A HEATING TOOL OR THE LIKE
Terry J. Hertel, 20065 Northwind Sq., Cupertino, Calif. 95104
Division of Ser. No. 778,699, Mar. 17, 1977. This application Sep. 1, 1978, Ser. No. 938,863
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30

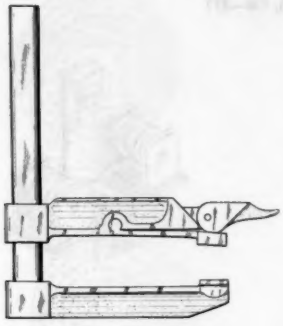


259,325
SCISSORS
Hidekazu Okada, Ashiya, Japan, assignor to Clover Mfg. Co. Ltd., Osaka, Japan
Filed Feb. 16, 1978, Ser. No. 878,587
The portion of the term of this patent subsequent to Aug. 1, 1992, has been disclaimed.
Term of patent 14 years
Int. Cl. D08—*03*
U.S. Cl. D8—57

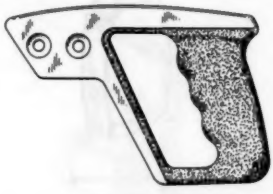
259,326
GLUEING JIG FOR PRODUCTION OF MODEL RAILWAY SWITCH POINTS
Janos Jozsa, Gråbergsvägen 3, Trollhättan, Sweden (461 00)
Filed Mar. 20, 1978, Ser. No. 888,681
Claims priority, application Sweden, Sep. 20, 1977, 1866
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—71



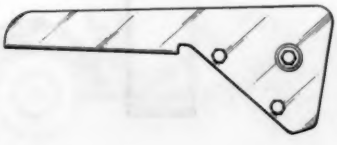
259,327
WOODWORKING CLAMP
Irving Sloane, Millerton, N.Y. 12546
Filed Nov. 16, 1978, Ser. No. 961,395
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—72



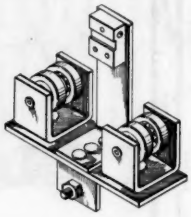
259,328
HANDLE FOR COMPASS SAW
Laird F. Covey, Easton, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Sep. 25, 1978, Ser. No. 945,782
Term of patent 14 years
Int. Cl. D08—*03*
U.S. Cl. D8—97



259,329
BOAT ANCHOR DAVIT
Robert G. Barbour, 10597 Ayres Ave., Los Angeles, Calif. 90064
Filed Nov. 26, 1979, Ser. No. 97,402
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—356



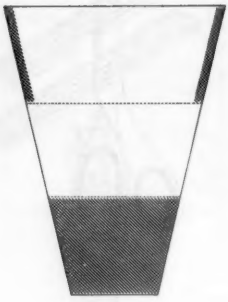
259,330
DOOR MOUNTING CARRIER FOR A TRACK SUPPORTED TRANSACTION SECURITY ENCLOSURE DOOR
James G. Stine, Allentown, Pa., assignor to Automatic Devices Company, Allentown, Pa.
Filed Sep. 18, 1979, Ser. No. 76,730
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—377



259,331
BOTTLE
Henry Saenz, Pittsburgh, Pa., assignor to J. L. Prescott Co., Passaic, N.J.
Filed Oct. 30, 1978, Ser. No. 955,692
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—404

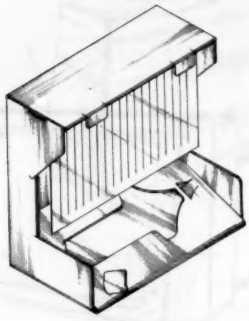
259,332
BOTTLE
Laurie Walton, 36 Curtis Rd., Balmain, N.S.W. 2041, Australia
Filed Apr. 20, 1978, Ser. No. 898,247
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—385

259,333
COMBINED SHIPPING AND PACKAGING ENVELOPE FOR A POTTED PLANT
Robert R. Charbonneau, 2083 Ian Ave., Mississauga, Ontario, Canada
Filed Oct. 11, 1977, Ser. No. 841,334
Term of patent 14 years
Int. Cl. D9—*05*
U.S. Cl. D9—306



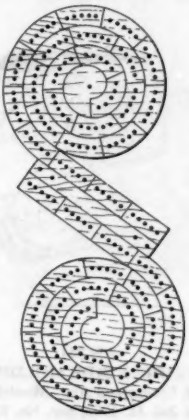
259,334
BOTTLE
Luis Sztuden, 5556 Bloch St., San Diego, Calif. 92122
Division of Ser. No. D. 899,838, Apr. 25, 1978. This application Jul. 17, 1980, Ser. No. 169,878
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—310

259,335
COMBINED PACKAGING CONTAINER AND TARGET FOR AN AIR GUN
Richard L. Gillespie, San Gabriel, Calif., assignor to Wham-O Mfg. Co., San Gabriel, Calif.
Filed Mar. 16, 1979, Ser. No. 21,089
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—337



259,336
SEISMIC CABLE LOCATOR
Lloyd Paitson, Drawer 2600, Galveston, Tex. 77552
Filed Jul. 7, 1978, Ser. No. 923,050
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—46

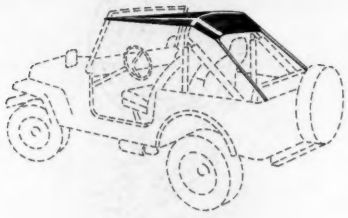
259,337
CRIBBAGE BOARD
Robert A. Blandy, 1744 Celeste, San Mateo, Calif. 94402
Filed Nov. 15, 1978, Ser. No. 960,822
Term of patent 14 years
Int. Cl. D10—*99*
U.S. Cl. D10—46.1



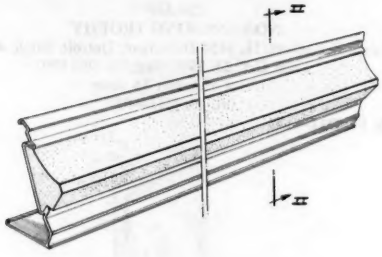
259,338
NON-SMOKING TROPHY
Okpara E. Tolbert, II, 6134 Dickerson, Detroit, Mich. 48213
Filed Oct. 23, 1978, Ser. No. 953,559
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—133

259,339
THREE WHEELED VEHICLE BODY
Sherman Vickers, P.O. Box 18322, Seattle, Wash. 98118
Filed May 14, 1979, Ser. No. 38,666
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—85

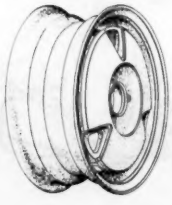
259,340
OPEN SIDE TOP FOR JEEPS
James J. Stengel, Boulder, Colo., assignor to Bestop Manufacturing Company, Boulder, Colo.
Filed Sep. 13, 1978, Ser. No. 942,174
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



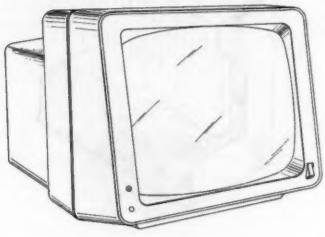
259,341
VEHICLE SIDE MOLDING
Peter Wang, 901E Greenwood Ave., Montebello, Calif. 90640
Filed Jul. 31, 1978, Ser. No. 929,684
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—190



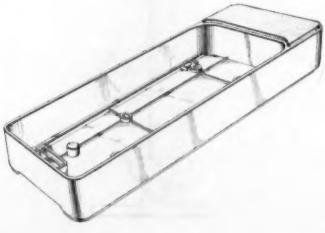
259,342
WHEEL
Björn E. A. Envall, Vänersborg, and Ulf K. Svanbäck, Lilla Edet, both of Sweden, assignors to Saab-Scania AB, Trollhattan, Sweden
Filed Aug. 24, 1979, Ser. No. 69,498
Claims priority, application Sweden, Feb. 27, 1979, 79-0505
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—209



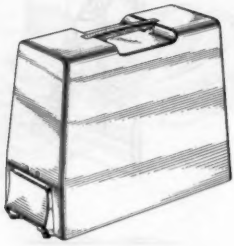
259,343
CATHODE RAY TUBE DISPLAY DEVICE
Edward Chamberlain, Chandlers Ford; Nicholas M. Leon, and Michael H. Sharp, both of Winchester, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 31, 1978, Ser. No. 892,068
Claims priority, application United Kingdom, Oct. 18, 1977, 981960/77
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—45



259,344
SEWING MACHINE BED COVER
Albert L. Newman, West Orange, and Clifford J. Kneipp, Livingston, both of N.J., assignors to The Singer Company, Stamford, Conn.
Filed Jun. 14, 1979, Ser. No. 48,338
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—72



259,345
CARRYING CASE COVER FOR A SEWING MACHINE
Albert L. Newman, West Orange, and M. Gary Grossman, Wyckoff, both of N.J., assignors to The Singer Company, Stamford, Conn.
Filed Aug. 6, 1979, Ser. No. 64,310
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—75



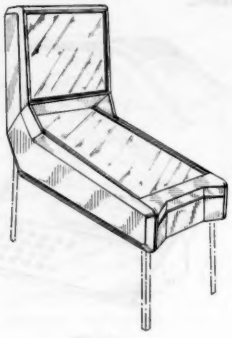
259,346
SEALING DISC FOR TIRE RETREADING
William M. DeHaven, Asheboro, N.C., assignor to Harrelson Rubber Company, Asheboro, N.C.
Filed Oct. 4, 1978, Ser. No. 948,525
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—199

259,347
TYPEWRITER
Takashi Hirata, Kawasaki, and Kunio Hirose, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 28, 1979, Ser. No. 52,987
Claims priority, application Japan, Jan. 19, 1979, 54-1612
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—1

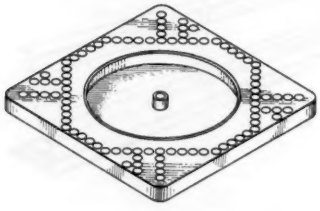
259,348
COMBINED DESK TOP ELECTRONIC CALCULATOR AND CLOCK
Masaaki Sakai, Tokyo, and Hideo Fushimoto, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 28, 1979, Ser. No. 52,990
Claims priority, application Japan, Jan. 25, 1979, 54-2566
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—2

259,349
DESK TOP ELECTRONIC CALCULATOR
Takashi Hirata, Kawasaki, and Kazuyoshi Odagawa, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 22, 1978, Ser. No. 972,080
Claims priority, application Japan, Jul. 3, 1978, 53-27954
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7

259,350
PINBALL GAME CABINET
Edward L. Stulik, and Charles W. Pelly, both of Calabasas, Calif., assignors to Bally Manufacturing Corporation, Chicago, Ill.
Filed Dec. 11, 1978, Ser. No. 968,403
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—7

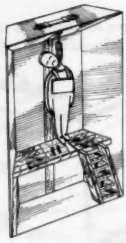


259,351
GAMEBOARD
James H. DeBoer, 3533 E. "D" Ave., Kalamazoo, Mich. 49004
Filed Oct. 16, 1978, Ser. No. 951,451
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—20



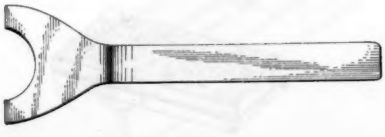
259,352
KITE
Mark H. Adams, III, 315 N. Crestway, Wichita, Kans. 67208, and Davidjon Flesher, 1115 Carlos, Wichita, Kans. 67203
Filed Oct. 16, 1978, Ser. No. 951,450
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—88

259,353
NOVELTY TOY COFFIN
John W. Slemmons, 19142 Glen Albyn, Orange, Calif. 92669
Filed Dec. 26, 1978, Ser. No. 973,382
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—109



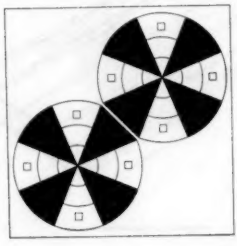
259,354
TASSELED CLINGING GAME BALL
Joseph B. Derrington, 15652 Parthenia St., Sepulveda, Calif. 91343
Filed Oct. 18, 1978, Ser. No. 952,569
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—203

259,355
UNDERWATER HOCKEY STICK
Peter Van Winkle, 110 Seaspray Ave., Palm Beach, Fla. 33480
Filed May 21, 1979, Ser. No. 40,847
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—210



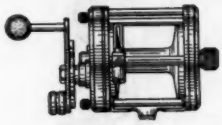
259,356
COMBINED POOL AND SANDBOX
Bruno Ferretti, Woburn, Mass., assignor to Martin Yale Industries, Inc., Chicago, Ill.
Filed Sep. 21, 1978, Ser. No. 944,251
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—252

259,357
GUN TARGET
Charles R. Dulude, 33 Burnside Ave., East Hartford, Conn. 06108
Filed Apr. 7, 1978, Ser. No. 894,642
Term of patent 14 years
Int. Cl. D22—*04*
U.S. Cl. D22—15

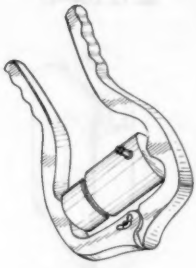


259,358
MINNOW DIPPER
William H. Jones, 8721 Elm St., Kansas City, Mo.
Filed May 7, 1979, Ser. No. 36,443
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—22

259,359
FISHING REEL
Seiji Myojo, Sakai, Japan, assignor to Shimano Kogyo Kabushiki Kaisha, Osaka, Japan
Filed May 7, 1979, Ser. No. 36,748
Claims priority, application Japan, Nov. 7, 1978, 53-47411
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25

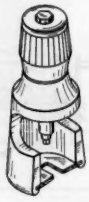


259,360
FLUID PUMP
Mervyn S. MacGregor, 7 Congdon St., Swanbourne, Western Australia 6010, Australia
Filed Oct. 13, 1978, Ser. No. 951,281
Claims priority, application Australia, Apr. 13, 1978, 74476/78
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—14

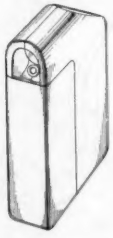


259,361
THERAPY TABLE
Harold A. Knackstedt, 201 E. Morgan St., Inman, Kans. 67546
Filed Feb. 8, 1978, Ser. No. 876,192
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—3

259,362
DENTAL BUR WRENCH TOOL
Richard P. Lewis, Springfield, Pa., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.
Filed Sep. 29, 1978, Ser. No. 947,216
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—10



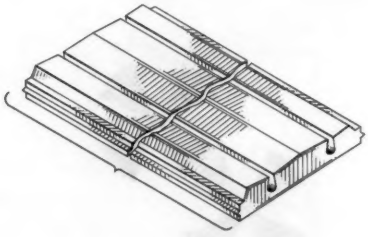
259,363
POCKET INHALATOR WITH ULTRASONIC SPRAYER OR ATOMIZER
Ernst Reichl, Munich, Fed. Rep. of Germany, assignor to Bosch-Siemens Hasugeräte GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jul. 7, 1978, Ser. No. 922,788
Claims priority, application Fed. Rep. of Germany, Jan. 13, 1978, MR 4771
Term of patent 14 years
Int. Cl. D24—*05*
U.S. Cl. D24—62



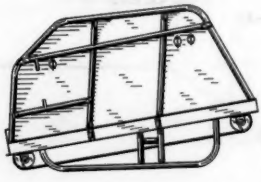
259,364
EXTRUDED ALUMINUM CHANNEL
Carl Poth, 1226 Manss Ave., Cincinnati, Ohio 45205
Filed Jun. 28, 1978, Ser. No. 919,897
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74

259,365
COMBINED DENTAL FLOSS HOLDER AND TOOTH PICK
Branislav Petrovic, 1540 E. Canfield La.-Apt. 15, Anaheim, Calif. 92805
Filed Aug. 28, 1978, Ser. No. 937,140
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—64

259,366
FLUME INTERLOCKING PLATFORM PANEL FOR ANIMAL CONFINEMENT PENS
Richard E. Bunger, 5202 E. Washington St., Phoenix, Ariz. 85034
Filed Aug. 13, 1979, Ser. No. 65,867
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—2



259,367
TREADMILL FOR ANIMALS
Tully W. Talbot, Audubon, Iowa, assignor to Emmert Manufacturing Company, Audubon, Iowa
Filed Jul. 3, 1978, Ser. No. 921,605
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—42



259,368

CURTAIN MATERIAL

Hans Stöcker, Wil, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland

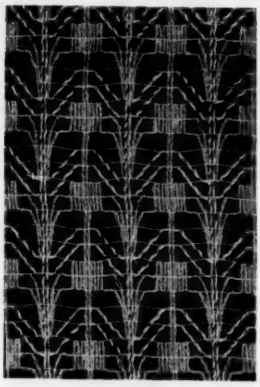
Filed May 30, 1979, Ser. No. 43,688

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 1187

Term of patent 14 years

Int. Cl. D5—*05*

U.S. Cl. D47—6 E



259,369

TRANSPARENT MONUMENT

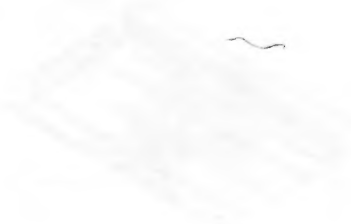
Joseph Splendora, Milford, Pa. 18337

Filed May 24, 1978, Ser. No. 909,244

Term of patent 14 years

Int. Cl. D31—*00*

U.S. Cl. D99—24



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF MAY, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Nattermann & Cie. GmbH: *See*—
Uhlendorf, Joachim; Betzing, Hans; Gabbar, Hamied; Graf, Erich; and Doppelfeld, Ille-Stephanie, 4,269,855, Cl. 424-285.000.

A-T-O Inc.: *See*—
Sullivan, John L.; Georgini, Eugene A.; and Simmonds, Milo R., 4,269,216, Cl. 137-102.000.

A. W. Chesterton Company: *See*—
Dutton, Walter L., 4,269,417, Cl. 277-11.000.

AB Volvo: *See*—
Fredell, Soren; and Jarl, Stig, 4,269,079, Cl. 74-365.000.

Abbot-Northwestern Hospitals Inc.: *See*—
Burton, Charles V.; and Lossing, Wallace W., 4,269,179, Cl. 128-75.000.

Abbott Laboratories: *See*—
DeBernardis, John F.; and Kyncl, John J., 4,269,858, Cl. 424-330.000.
Erwin, Phillip, 4,269,511, Cl. 356-368.000.
Tadanier, John S.; and Martin, Jerry R., 4,269,970, Cl. 536-17.00R.

Abendschein, Frederic H.: *See*—
Kountz, Kenneth J.; Cooper, Kenneth W.; and Abendschein, Frederic H., 4,269,261, Cl. 165-2.000.

Abolins, Visvaldis; and Lee, Gim F., Jr., to General Electric Company. Thermoplastic molding compositions of vinyl aromatic compound α,β unsaturated cyclic anhydride copolymers. 4,269,950, Cl. 525-68.000.

Abraham, Jeffrey L.; and Banse, Gary D. Spring type ball pitching apparatus. 4,269,162, Cl. 124-7.000.

Abraham, William W., to Consolidated Medical Equipment Inc. Skin conducting electrode assembly. 4,269,189, Cl. 128-303.130.

ACF Industries Incorporated: *See*—
Winkley, Jerry H., 4,269,792, Cl. 261-39.00B.

Ackermann, Hans: *See*—
Horvath, Zoltan; Muggli, Jurg; Ackermann, Hans; and Tresch, Erwin, 4,269,510, Cl. 356-338.000.

Acra Plant, Inc.: *See*—
Robertson, Forrest E.; and Williams, Donald E., 4,269,274, Cl. 172-699.000.

Adachi, Eiichi, to Ricoh Company, Ltd. Identification information addition system of facsimile apparatus. 4,270,146, Cl. 358-256.000.

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Adair, Edwin L., to Medical Dynamics, Inc. Transcutaneous vasectomy apparatus and method. 4,269,174, Cl. 128-1.00R.

Adamant Kogyo Co., Ltd.: *See*—
Ozawa, Minoru, 4,269,900, Cl. 428-542.000.

Adams, Albert. Device for harvesting grapes or other berries and apparatus provided with this device. 4,269,022, Cl. 56-330.000.

Adams, Harold R. Valve stem lock. 4,269,221, Cl. 137-383.000.

Adler, Stanford L.; and Gordon, Abraham, to Technicon Instruments Corporation. Transfer apparatus. 4,269,139, Cl. 118-642.000.

Advanced Systems, Inc.: *See*—
Gurian, Marshall I., 4,269,716, Cl. 210-675.000.

Aerochem Research Laboratories, Inc.: *See*—
Allen, Jonathan; and Gould, Robert K., 4,269,507, Cl. 356-36.000.

Aeroquip Corporation: *See*—
Allread, Alan R., 4,269,226, Cl. 137-614.000.

AES Technology Systems, Inc.: *See*—
Sargis, John R.; and AES Technology Systems, Inc., 4,269,401, Cl. 270-58.000.

Agency of Industrial Science and Technology: *See*—
Ebata, Yoshihiro; Toibana, Yasuo; Uetsuki, Tsuneo; Kose, Saburo; and Kinoshita, Makoto, 4,269,641, Cl. 156-89.000.
Ichimura, Kunihiro, 4,269,941, Cl. 435-182.000.

AGFA-Gevaert, A.G.: *See*—
Engelsmann, Dieter; and Schroder, Rolf, 4,269,492, Cl. 354-42.000.

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Janssens, Wilhelmus; Somers, Alphonse; and Claeys, Daniel A., 4,269,924, Cl. 430-214.000.
Roosen, Raymond A.; Pollet, Robert J.; and Vandenberghe, Antoon L., 4,269,923, Cl. 430-140.000.
Umans, Frans M.; Ceuppens, Willy G.; Palmans, Willy J.; and Overmeer, Robert T., 4,269,594, Cl. 432-59.000.
Verkinderen, Paul A.; Verhoeven, Ludovicus H.; Christiaen, Lucien A.; Pira, Camille F.; and Marckx, Michel L., 4,269,647, Cl. 156-157.000.

Agladze, Georgy R.: *See*—
Agladze, Rafael I.; Manukov, Erik A.; and Agladze, Georgy R., 4,269,689, Cl. 204-268.000.

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Agrawal, Bhagwati P.; and Shenoi, Kishan, to International Telephone and Telegraph Corporation. Telephone subscriber line unit with sigma-delta digital to analog converter. 4,270,027, Cl. 179-81.00R.

Agrawal, Bhagwati P.: *See*—
Shenoi, Kishan; and Agrawal, Bhagwati P., 4,270,026, Cl. 179-15.55R.

Agrawal, Suphal P.; and Weisert, Edward D., to Rockwell International Corporation. Method of superplastic forming using release coatings with different coefficients of friction. 4,269,053, Cl. 72-42.000.

Ahmed, Adel A. A., to RCA Corporation. Relaxation oscillator having switched current source. 4,270,101, Cl. 331-111.000.

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Takeda, Yutaka; Aiki, Kunio; and Ito, Ryoichi, 4,270,134, Cl. 357-19.000.

Ain, Mark S.: *See*—
Baxter, Larry K.; Cohen, Robert D.; Ain, Mark S.; and Apsell, Sheldon P., 4,270,043, Cl. 235-419.000.

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Cordier, Andre G., 4,269,112, Cl. 98-115.0SB.

Aisin Seiki Company, Limited: *See*—
Kondo, Toshiyuki; and Ando, Masamoto, 4,269,456, Cl. 303-115.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Hida, Takashi; Mitsui, Tsutomu; Kuwana, Kazutaka; and Hashiride, Tadaaki, 4,269,045, Cl. 66-75.200.
Mashiki, Nobuo; and Chigusa, Koichi, 4,269,533, Cl. 403-410.000.

Akasaka, Chuji: *See*—
Chaki, Takao; and Akasaka, Chuji, 4,269,074, Cl. 74-10.330.

Akiyama, Satoshi: *See*—
Shikutani, Michio; and Akiyama, Satoshi, 4,269,571, Cl. 417-234.000.

Aktiebolaget Bofors: *See*—
Broberg, Hans; Douren, Lars; and Troeng, John, 4,269,655, Cl. 159-13.00A.

Aktiebolaget Karlstads Mekaniska Werkstad: *See*—
Jansson, Erik O.; Naucler, Bengt O.; and Asberg, Thomas, 4,269,568, Cl. 415-204.000.

Aktiebolaget SKF: *See*—
Persson, Stig, 4,269,420, Cl. 277-53.000.

Aktiebolaget Svenska Flaktfabriken: *See*—
Gustavsson, Lennart, 4,269,578, Cl. 425-83.100.

Aktiebolaget Tudor: *See*—
Schmechtig, Rune, 4,269,906, Cl. 429-67.000.

Akzo N.V.: *See*—
Gunter, Gerhard; and Haeufler, Hartmut, 4,269,866, Cl. 427-27.000.

Akzona Incorporated: *See*—
Kolczynski, James R.; and Schultz, Gerald A., 4,269,726, Cl. 252-186.000.

Albanese, Damian F., to International Telephone and Telegraph Corporation. Digital compressive receiver. 4,270,209, Cl. 375-96.000.

Albert-Frankenthal AG, Firma: *See*—
Fischer, Rudolf; and Hartmann, Karl-Heinz, 4,269,402, Cl. 493-437.000.

Albert, Walter: *See*—
Borchert, Herbert; Albert, Walter; Kohaut, Gunter; Schulte, Ulrich; and Rapp, Bruno, 4,269,895, Cl. 428-402.000.

Alcan Aluminiumwerk Nurnberg GmbH: *See*—
Rosch, Fritz, 4,269,287, Cl. 188-1.00B.

Allen, Denis L. C., to Ford Motor Company. Track for sliding closure. 4,268,996, Cl. 49-212.000.

Allen, Jonathan; and Gould, Robert K., to Aerochem Research Laboratories, Inc. Method and apparatus for pulverizing solid materials with a grindstone and injecting particles thereof into a flame for analysis. 4,269,507, Cl. 356-36.000.

Allied Chemical Corporation: *See*—
Berry, Michael J.; and Barrett, Joseph J., 4,269,509, Cl. 356-301.000.
DellaVecchia, Michael P.; Mackey, Joseph E.; and Steinberg, Albert H., 4,269,884, Cl. 428-131.000.
Pez, Guido; and Anderson, Lowell R., 4,269,738, Cl. 252-500.000.
Yancey, Paul J., 4,269,652, Cl. 156-607.000.

Allione, Michele: *See*—
Cavallino, Francesco; Martinez, Pasquale; Allione, Michele; and Schiavuzzi, Roberto, 4,269,029, Cl. 60-293.000.

Allis-Chalmers Corporation: *See*—
Berti, Jerome L., 4,269,158, Cl. 123-563.000.
Faulkner, Bobby P.; Heyer, Wayne D.; and Weinecke, Michael H., 4,269,593, Cl. 432-58.000.

Allread, Alan R., to Aeroquip Corporation. Universal breakaway coupling. 4,269,226, Cl. 137-614.000.

Almond, George, to Empire of Carolina, Inc. Vehicle drive with freewheeling and braking. 4,269,291, Cl. 192-6.00R.

Alphatype Corporation: *See—*
Tidd, James A.; and Tidd, Miles H., 4,270,172, Cl. 364-523.000.

Alps Electric Co., Ltd.: *See—*
Tsuchiya, Tatsuhiko; and Oka, Mikiwo, 4,269,373, Cl. 242-191.000.

Alsup, James M.; and Whitehouse, Harper J., to United States of America, Navy. Sampled speech compression system. 4,270,025, Cl. 179-15.55R.

Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., to Pfizer Inc. 1,9-Dihydroxyoctahydrophenanthrenes and intermediates therefor. 4,270,005, Cl. 568-328.000.

Altman Associates, Inc.: *See—*
Altman, Norman G., 4,269,515, Cl. 356-394.000.

Altman, Norman G., to Altman Associates, Inc. Electro-optical system for inspecting printed circuit boards. 4,269,515, Cl. 356-394.000.

Altmann, Marcel. Implement for the laying of cables and the like. 4,269,541, Cl. 405-181.000.

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Altorfer, Kenneth J.; and Marantz, Daniel R., to Texasgulf Inc. Metallizing of a corrodible metal with a protective metal. 4,269,867, Cl. 427-37.000.

Aluminum Company of America: *See—*
Clark, John F., 4,269,673, Cl. 204-67.000.

Alway, David M.: *See—*
Pryor, Timothy R.; Alway, David M.; and Hageniers, Omer L., 4,269,874, Cl. 427-282.000.

Amano Pharmaceutical Co. Ltd.: *See—*
Yamada, Hideaki; Shimizu, Sakayu; and Tani, Yoshiki, 4,269,942, Cl. 435-193.000.

AMBAC Industries, Incorporated: *See—*
Moore, James R., 4,268,964, Cl. 30-276.000.

American Cyanamid Company: *See—*
Hardy, Robert A., Jr.; Baker, Jannie S.; and Quinones, Nicanor Q., 4,269,980, Cl. 544-256.000.
Lipfert, Donald E.; and Goldschmidt, Willfred, 4,269,527, Cl. 401-200.000.
Tomcufcik, Andrew S.; and Sloboda, Adolph E., 4,269,832, Cl. 424-244.000.
Villamarin, Arturo A.; and de Gomez, Mabel A. S., 4,269,824, Cl. 424-70.000.

American Hospital Supply Corporation: *See—*
Zboralski, Jon A.; Tringali, Richard C.; and Grow, Harry N., 4,269,615, Cl. 55-480.000.

American Optical Corporation: *See—*
Young, John M., 4,269,487, Cl. 351-58.000.

Amicon Corporation: *See—*
Dean, Peter D. G.; Brown, Peter J.; and Bouriotis, Vasilis, 4,269,605, Cl. 23-230.00B.

Ammon, J. Preston; Weaver, Harry R.; and Rodriquez, Claude, to Elfab Corporation. Electrical connector insulator. 4,269,468, Cl. 339-176.00M.

AMP Incorporated: *See—*
Huber, John H., 4,269,466, Cl. 339-107.000.
Hughes, Donald W. K., 4,269,467, Cl. 339-126.00R.
Mueller, Arthur L., 4,269,465, Cl. 339-95.00R.
Shaffer, Howard R.; and Wycheck, Thomas H., 4,269,472, Cl. 339-223.00R.

Ampex Corporation: *See—*
Diermann, Joachim P.; and Ritchey, Thomas W., Jr., 4,270,150, Cl. 360-10.000.

Analog Devices, Incorporated: *See—*
Brokaw, Adrian P., 4,270,118, Cl. 340-347.0AD.

Anantha, Narasipur G.; and Srinivasan, Gurumakonda R., to International Business Machines Corporation. Selective epitaxy method using laser annealing for making filamentary transistors. 4,269,631, Cl. 148-1.500.

Ancos Co., Ltd.: *See—*
Hashimoto, Yasuyuki; and Torii, Osamu, 4,269,524, Cl. 401-65.000.

Anderberg, Erling L. Apparatus for drying or dehumidifying gases. 4,269,611, Cl. 55-179.000.

Anders, Dietmar; and Brand, Wilhelm, to Hermann Berstorff Maschinenbau GmbH. Drive means for a cascade extruder. 4,269,085, Cl. 74-665.0GA.

Andersen, Henry L. Jack mechanism. 4,269,392, Cl. 254-95.000.

Andersen, Holger. Seam press for tubular clothing parts. 4,268,982, Cl. 38-12.000.

Anderson, Lowell R.: *See—*
Pez, Guido; and Anderson, Lowell R., 4,269,738, Cl. 252-500.000.

Anderson, Paul T., to Westinghouse Electric Corp. Thermal overload relay. 4,270,113, Cl. 337-75.000.

Anderson Strathclyde Limited: *See—*
Wilson, Samuel L., 4,269,448, Cl. 299-1.000.

Ando, Masamoto: *See—*
Kondo, Toshiyuki; and Ando, Masamoto, 4,269,456, Cl. 303-115.000.

Angstrohm Precision Incorporated: *See—*
Sease, D. Lamar; Solow, Benjamin; Boeckmann, Eduard F.; and Rabinow, David, 4,268,954, Cl. 29-620.000.

Aoki, Minoru: *See—*
Yaguchi, Kunihide; Takaiwa, Masakazu; and Aoki, Minoru, 4,269,806, Cl. 422-171.000.

Aosco & Associates, Ltd.: *See—*
Aossey, Joseph W., 4,269,297, Cl. 194-1.00B.

Aossey, Joseph W., to Aosco & Associates, Ltd. Vending machine see-thru coin box. 4,269,297, Cl. 194-1.00B.

Aoyagi, Yoshiaki: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; and Tanaka, Haruo, 4,269,838, Cl. 424-250.000.

Applied Plastics Co., Inc.: *See—*
Firth, Francis G., 4,269,751, Cl. 260-31.20R.

Apsell, Sheldon P.: *See—*
Baxter, Larry K.; Cohen, Robert D.; Ain, Mark S.; and Apsell, Sheldon P., 4,270,043, Cl. 235-419.000.

Arai, Atsuaki; Oishi, Yasushi; Nakazyo, Kiyoshi; Sugizaki, Atsushi; and Okumura, Akio, to Fuji Photo Film Co., Ltd. Process of forming yellow photographic images. 4,269,936, Cl. 430-389.000.

Arai, Eisuke; Kamei, Kuniaki; Kawasaki, Akio; Takagi, Fumio; Shirai, Koichi; and Orihara, Yasuharu, to Dai Nippon Insatsu K.K. Transfer printing apparatus. 4,269,650, Cl. 156-540.000.

Arai, Yasuyuki: *See—*
Yoshino, Toshikazu; Arai, Yasuyuki; Tsukagoshi, Tsunehiro; and Yokozeki, Shinichi, 4,269,416, Cl. 369-256.000.

Arakawa, Tatsumi: *See—*
Fukuoka, Masayuki; Arakawa, Tatsumi; Kimura, Muneaki; Masukawa, Yukihisa; and Kobayashi, Hidehiko, 4,269,911, Cl. 429-199.000.

Araki, Tatsuo; Okamoto, Yasuo; Ohtomo, Fumio; and Atsumi, Hiroto, to Tokyo Shibaura Denki Kabushiki Kaisha. Valve apparatus. 4,269,227, Cl. 137-630.140.

Araki, Yoshitaka: *See—*
Ishizaka, Sunao; Araki, Yoshitaka; and Muryoi, Takeshi, 4,269,497, Cl. 354-286.000.

Aratame, Kazuhisa: *See—*
Shiozawa, Kazuo; Yagi, Michio; Suzuki, Kijiro; Aratame, Kazuhisa; Shimokawa, Ryushi; and Ishihara, Haruji, 4,269,494, Cl. 354-60.00L.

Arcamone, Federico: *See—*
Lombardi, Paolo; Franceschi, Giovanni; and Arcamone, Federico, 4,269,771, Cl. 260-245.20R.

Arco Industries Ltd.: *See—*
D'Andrade, Bruce M., 4,269,596, Cl. 434-32.000.

Arco Polymers, Inc.: *See—*
Blommers, Elizabeth A.; Poole, William J.; and Ingram, Alvin R., 4,269,871, Cl. 427-222.000.

Arenco P.M.B. B.V.: *See—*
Boogers, Wilhelmus P. L., 4,269,202, Cl. 131-290.000.

Arendt, Georgy A.: *See—*
Unigovsky, Mikhail R.; Rulevsky, Evgeny V.; Arendt, Georgy A.; Chirskov, Vladimir G.; Konovalov, Julian K.; Ivanov, Vasily T.; Nemirovsky, Isaak Y.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; and Kheinis, Alexandr B., 4,269,552, Cl. 409-140.000.

ARES, Inc.: *See—*
Stoner, Eugene M., 4,269,108, Cl. 89-33.00R.
Stoner, Eugene M., 4,269,109, Cl. 89-198.000.

Argus Chemical Corporation: *See—*
Mack, Gerry, 4,269,731, Cl. 252-400.00R.
Spiegelman, Gerald; and Liauw, Koei-Liang, 4,269,782, Cl. 260-429.700.

Arjomari-Prioux: *See—*
Gomez, Daniel; and Bartoli, Giampaolo, 4,269,657, Cl. 162-135.000.

Armco Inc.: *See—*
Cowan, William S., 4,269,268, Cl. 166-208.000.
Hogan, John C.; and Gibson, Alan F., 4,269,398, Cl. 266-230.000.

Armitage, David, to Leveen, Harry H. Inducing local hyperthermia by inductive diathermy. 4,269,199, Cl. 128-804.000.

Arneklev, Duane R.: *See—*
Pallos, Ferenc M.; Brokke, Mervin E.; and Arneklev, Duane R., 4,269,618, Cl. 71-88.000.

Arnold, Franklin D.: *See—*
Benton, Charles M.; Arnold, Franklin D.; Forberg, Helge O.; Tuscher, Roger L.; and Evrad, Gerald D., 4,269,592, Cl. 432-19.000.

Arns, Harold E.: *See—*
Bejerano, Abraham; Bennett, George J.; and Arns, Harold E., 4,270,153, Cl. 360-78.000.

Aro Corporation, The: *See—*
Carter, Raymond D.; and Clark, Allen L., 4,269,223, Cl. 137-460.000.

Arthur A. Collins, Inc.: *See—*
Collins, Arthur A.; Bayless, Jon W., Sr.; and Pedersen, Robert D., 4,270,203, Cl. 370-102.000.

Arthur Schmid AG: *See—*
Principe, Viktor, 4,269,131, Cl. 112-273.000.

Asagao, Soichi; Nakatani, Masaru; Nakagawa, Shinsuke; Takahara, Yoshiyuki; and Okada, Naoki, to Central Glass Company, Limited. Process for preparing crystalline ammonium dihydrogen phosphate. 4,269,814, Cl. 423-308.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Fukuoka, Masayuki; Arakawa, Tatsumi; Kimura, Muneaki; Masukawa, Yukihisa; and Kobayashi, Hidehiko, 4,269,911, Cl. 429-199.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Ohishi, Michiro, 4,270,140, Cl. 358-55.000.
Takami, Satoshi, 4,269,490, Cl. 354-24.000.

Asahi Malleablt Iron, Co., Ltd.: *See*—
Nakai, Kiyoshi; Miyajima, Hidenobu; and Harada, Syuji, 4,269,333, Cl. 222-484.000.
Asahi Seimitsu Kabushiki Kaisha: *See*—
Koenuma, Masao, 4,268,969, Cl. 33-438.000.
Asanuma, Yoshimasa; and Nishimura, Taiichi to Fuji Photo Film Co., Ltd. Photographic polyolefin coated paper b. es with ionomer layer. 4,269,937, Cl. 430-538.000.
Asberg, Thomas: *See*—
Jansson, Erik O.; Naucler, Bengt O.; and Asberg, Thomas, 4,269,568, Cl. 415-204.000.
ASEA Aktiebolag: *See*—
Brogardh, Torgny, 4,270,050, Cl. 250-231.00R.
Ashland Oil, Inc.: *See*—
Norton, Richard V.; and Howe, Steven C., 4,270,014, Cl. 585-22.000.
Ashpole, Raymond S.; Peachey, Colin J.; and Kar, Arup K., to Associated Electrical Industries Limited. Strength members for the reinforcement of optical fibre cables. 4,269,024, Cl. 57-232.000.
Asija, Satya P. Automated information input, storage, and retrieval system. 4,270,182, Cl. 364-900.000.
Askew, Henry E. Masonry cleaning tool. 4,268,965, Cl. 30-304.000.
Associated Electrical Industries Limited: *See*—
Ashpole, Raymond S.; Peachey, Colin J.; and Kar, Arup K., 4,269,024, Cl. 57-232.000.
Assouline, David. Device to keep birds from alighting on buildings. 4,269,008, Cl. 52-101.000.
Atchison, George J.; McEwen, Gerald K.; and Stevens, Violete L., to Dow Chemical Company, The. Radiation curable flame retardant compositions containing 2,2-dialkylpropane-1,3-diolbis[bis-(acryloyloxylkyl) phosphates]. 4,269,727, Cl. 252-188.30R.
Atco Manufacturing Co., Inc.: *See*—
Vorbeck, Donald W., 4,269,147, Cl. 119-73.000.
Atherton, James H.: *See*—
Jindra, Clifford P.; and Atherton, James H., 4,270,190, Cl. 365-208.000.
Atlantic Richfield Company: *See*—
O'Toole, James T., 4,269,969, Cl. 528-498.000.
Atsumi, Hiroto: *See*—
Araki, Tatsuo; Okamoto, Yasuo; Ohtomo, Fumio; and Atsumi, Hiroto, 4,269,227, Cl. 137-630.140.
Atwell, Robert E., to Eastman Kodak Company. Internally doped surface sensitized high chloride silver halide emulsions and photograhic elements and processes for their preparation. 4,269,927, Cl. 430-217.000.
Aubard, Gilbert G.: *See*—
Torossian, Dieran R.; and Aubard, Gilbert G., 4,269,778, Cl. 260-397.450.
Audic, Bernard, to Souriau & Cie. Contact terminal connector. 4,269,469, Cl. 339-177.00R.
Ayusawa, Saburo: *See*—
Ikeno, Teruo; Kado, Satoshi; Ayusawa, Saburo; Kawasaki, Hironobu; and Watanabe, Takashi, 4,269,904, Cl. 428-623.000.
Aziende Colori Nazionali Affini ACNA S.p.A.: *See*—
Moiso, Ugo; Massabo, Vincenzo; and Domenis, Danilo, 4,269,769, Cl. 260-176.000.
B. F. Goodrich Company, The: *See*—
Morningstar, Marion G.; and Postel, William D., Jr., 4,269,954, Cl. 526-62.000.
Patel, Pradeep V., 4,269,668, Cl 203-9.000.
Woods, Martin E.; and Chang, Daniel M., 4,269,740, Cl. 260-4.00R.
Babu, Suresh P.; and Knight, Richard A., to Institute of Gas Technology. Coal refining. 4,269,692, Cl. 208-8.0LE.
Bacon, Robert E.; Raleigh, Ronald G.; and Rosenfeld, Robert B., to Eastman Kodak Company. Ultrasonographic elements containing multiple layers and processes for their use. 4,269,914, Cl. 430-3.000.
Bafaro, Michael P., to Motorola, Inc. Video amplifier arrangement with wideband D-C gain control. 4,270,126, Cl. 340-748.000.
Bailey, Charles H.; DePalma, Ted V.; and Dillon, James E., to UOP Inc. Catalytic converter mounting arrangement for reducing bypass leakage. 4,269,807, Cl. 422-179.000.
Baines, Eric; and Harvey, Kenneth, to Colgate-Palmolive Co. Periodontal dental preparation. 4,269,823, Cl. 424-52.000.
Baker, Cecil J., to Whirlpool Corporation. Ice receptacle support. 4,269,039, Cl. 62-344.000.
Baker, Jannie S.: *See*—
Hardy, Robert A., Jr.; Baker, Jannie S.; and Quinones, Nicanor Q., 4,269,980, Cl. 544-256.000.
Baker, Richard H., to Exxon Research & Engineering Company. Bridge converter circuit. 4,270,163, Cl. 363-43.000.
Baker, Thomas G.: *See*—
Wechsler, Joseph R.; Baker, Thomas G.; Battaglini, George T.; and Skradski, Frank L., 4,269,730, Cl. 252-356.000.
Baker, William, to Masco Corporation. Processor controlled, service selecting, AM/FM scanning radio receiver. 4,270,217, Cl. 455-165.000.
Baker, William B., to Du Pont de Nemours, E. I., and Company. Dosimeter having constant flow pump. 4,269,059, Cl. 73-28.000.
Baldwin, Peter H.: *See*—
Gilbert, John R. B.; and Baldwin, Peter H., 4,269,687, Cl. 204-242.000.
Ballard, Denis G. H.; Meredith, William N. E.; and Rideal, Graham R., to Imperial Chemical Industries Limited. Compositions of vermiculite lamellae and solid particulate materials. 4,269,628, Cl. 106-86.000.
Balzer & Droll: *See*—
Muskulus, Willi, 4,269,235, Cl. 140-92.100.
Banasiak, Dennis S., to Phillips Petroleum Company. Olefin disproportionation. 4,269,780, Cl. 260-405.000.
Bandag Incorporated: *See*—
Brewer, Donaldee; and Dundon, Michael J., 4,269,643, Cl. 156-96.000.
Bank of America N.T. & S.A.: *See*—
Naffziger, Larry C., 4,269,564, Cl. 415-53.00R.
Banse, Gary D.: *See*—
Abraham, Jeffrey L.; and Banse, Gary D., 4,269,162, Cl. 124-7.000.
Barber, Peter R.: *See*—
Pyne, Bernard; Gray, Reginald W. H.; and Barber, Peter R., 4,270,201, Cl. 368-282.000.
Barford, Eric D.; Gray, Robin A.; and Saul, Michael R., to Jeyes Group Limited. Process for making a lavatory cleansing block and use. 4,269,723, Cl. 252-106.000.
Barnes, Arthur C.: *See*—
Barnes, Carl E.; and Barnes, Arthur C., 4,269,665, Cl. 203-14.000.
Barnes, Carl E.; and Barnes, Arthur C. Drying quaternary ammonium compounds. 4,269,665, Cl. 203-14.000.
Barraque, Christian; Burriat, Jean; and Rovel, Jean-Marie, to Degremont. Process and apparatus for treating by ion exchange or adsorption fluids having solid particles suspended therein. 4,269,715, Cl. 210-675.000.
Barrash, Marshall J., to Coca-Cola Company, The. Elastic band and handle structure for forming packages of groups of containers. 4,269,314, Cl. 206-428.000.
Barrett, Joseph J.: *See*—
Berry, Michael J.; and Barrett, Joseph J., 4,269,509, Cl. 356-301.000.
Barry, Robert L. Cable connector. 4,269,378, Cl. 248-56.000.
Barry Wright Corporation: *See*—
Jensen, William S., 4,269,400, Cl. 267-153.000.
Bartleson, John D.; and Wollensak, John C., to Ethyl Corporation. Amine antioxidant. 4,269,720, Cl. 252-50.000.
Bartoli, Giampaolo: *See*—
Gomez, Daniel; and Bartoli, Giampaolo, 4,269,657, Cl. 162-135.000.
Barton, Derek H. R.; Bronstein-Bonte, Irena Y.; and Taylor, Lloyd D., to Polaroid Corporation. Polymeric optical filter agents and photographic products and processes containing same. 4,269,925, Cl. 430-215.000.
Bartz, Wilfried: *See*—
Gorke, Klaus; and Bartz, Wilfried, 4,269,626, Cl. 106-18.320.
Barvet, Serge: *See*—
Le Tron, Yves; Obregon, Juan; Marechal, Pierre-Georges; and Barvet, Serge, 4,270,097, Cl. 331-96.000.
BASF Aktiengesellschaft: *See*—
Bejerano, Abraham; Bennett, George J.; and Arns, Harold E., 4,270,153, Cl. 360-78.000.
Bejerano, Abraham, 4,270,155, Cl. 360-106.000.
Brunold, Andreas; Kroetzsch, Peter; and Diehl, Lothar, 4,269,609, Cl. 55-71.000.
Heilen, Gerd; Nissen, Axel; and Woerz, Otto, 4,270,006, Cl. 568-396.000.
May, Hans-Joachim; and Koenig, Horst, 4,269,990, Cl. 548-315.000.
Treiber, Hans J.; Lenke, Dieter; and Worstmann, Wolfgang, 4,269,833, Cl. 424-244.000.
Basile, Richard J.: *See*—
Worley, Arthur C.; and Basile, Richard J., 4,269,166, Cl. 126-285.00R.
Battaglini, George T.: *See*—
Wechsler, Joseph R.; Baker, Thomas G.; Battaglini, George T.; and Skradski, Frank L., 4,269,730, Cl. 252-356.000.
Battelle Memorial Institute: *See*—
Rohrmann, Charles A., 4,269,817, Cl. 423-502.000.
Baugh, Benton F., to Brown Oil Tools, Inc. Power slip assembly. 4,269,277, Cl. 173-149.000.
Baum, Gerald A.: *See*—
Hulyalkar, Ramchandra K.; and Baum, Gerald A., 4,269,743, Cl. 260-23.0XA.
Hulyalkar, Ramchandra K.; and Baum, Gerald A., 4,269,744, Cl. 260-23.0XA.
Baumann, Rainer: *See*—
Tinnes, Bernhard; Baumann, Rainer; and Dur, Bernhard, 4,269,399, Cl. 266-236.000.
Baumanns, Herbert. Radiant burner. 4,269,590, Cl. 431-210.000.
Baumgartner Papier S.A.: *See*—
Dupre, Georges, 4,269,526, Cl. 401-198.000.
Baxter, Larry K.; Cohen, Robert D.; Ain, Mark S.; and Apsell, Sheldon P., to Kronos Inc. Methods of and apparatus for time clock recording and computation and related uses. 4,270,043, Cl. 235-419.000.
Bayer Aktiengesellschaft: *See*—
Elfert, Klaus; Wolf, Gerhard D.; and Rosenkranz, Hans J., 4,269,967, Cl. 528-337.000.
Fitzky, Hans G.; Soder, Jorg M.; Schmitt, Franz; Boliongino, Norbert; and Rehrmann, Helmut, 4,270,083, Cl. 324-58.50C.
Freitag, Dieter; Nouvertne, Werner; Burkhardt, Claus; and Kleiner, Frank, 4,269,964, Cl. 528-126.000.
Hamprecht, Rainer, 4,269,770, Cl. 260-208.000.
Lewalter, Jurgen; Rottmaier, Ludwig; Merten, Rudolf; Zecher, Wilfried; Dunwald, Willi; and Schulte, Bernhard, 4,269,750, Cl. 260-30.200.
Molls, Hans-Heinz; Kaspar, Vaclav; and Moutsokapas, Asterios, 4,268,972, Cl. 34-60.000.
Nachtkamp, Klaus; Pedain, Josef; and Grammel, Jurgen, 4,269,748, Cl. 260-29.2TN.

Bayerische Motoren Werke Aktiengesellschaft: *See*—
Gersmann, Klaus; and Gruber, Oskar, 4,269,446, Cl. 297-341.000.
Bayless, Jon W., Sr.: *See*—
Collins, Arthur A.; Bayless, Jon W., Sr.; and Pedersen, Robert D., 4,270,203, Cl. 370-102.000.
Bayliss, John A.: *See*—
Koehler, Robert J.; and Bayliss, John A., 4,270,167, Cl. 364-200.000.
Bayssat, Michel; Sautel, Francis; Depin, Jean-Claude; and Matibet, Annie B., to Lipha, Lyonnaise Industrielle Pharmaceutique. 5-Substituted indan-2-carboxylic acid and functional derivatives. 4,269,848, Cl. 424-275.000.
Beal, Robert R.: *See*—
Clarke, Robin; Thomas, Douglas J.; Kilmister, George T. F.; and Beal, Robert R., 4,269,051, Cl. 72-9.000.
Beatenbough, Charles M., to Bell Telephone Laboratories, Incorporated. Connector. 4,269,463, Cl. 339-91.00R.
Bechgaard, Carl C.; and Dulat, Joseph, to Wood-Slimp GmbH. Method of preserving timber. 4,269,875, Cl. 427-291.000.
Bechtiger, Charles G.; and Miller, James C., to Sargent & Greenleaf, Inc. Time lock with kicker arm carrier actuator. 4,269,050, Cl. 70-272.000.
Beck, Arnold A.; and Ruof, Edgar J., to Goodyear Aerospace Corporation. Antiskid brake control system. 4,269,455, Cl. 303-106.000.
Beck, Mark E., to Eaton Corporation. Thermostatic fluid valve with power element extension and method of constructing same. 4,269,350, Cl. 236-34.500.
Becker, Paul H.: *See*—
Woods, Quentin T.; Becker, Paul H.; and Gerverdinck, William D., 4,269,015, Cl. 53-526.000.
Beckman Instruments, Inc.: *See*—
Lillig, John E., 4,270,178, Cl. 364-579.000.
Bednar, Bohumil: *See*—
Kalal, Jaroslav; Bednar, Bohumil; Zachoval, Jaromir; Petr, Jiri; Pelcbauer, Zdenek; and Svec, Frantisek, 4,269,962, Cl. 526-273.000.
Beecham Group Limited: *See*—
Rose, Carl J.; and Miller, David, 4,270,004, Cl. 568-314.000.
Behney, Charles A. Method of and clamp for applying pressure to a skin region. 4,269,190, Cl. 128-325.000.
Behringwerke AG: *See*—
Bohn, Hans; and Winckler, Wilhelm, 4,269,825, Cl. 424-85.000.
Bejerano, Abraham; Bennett, George J.; and Arns, Harold E., to BASF Aktiengesellschaft. Optical control system for transducer positioning apparatus. 4,270,153, Cl. 360-78.000.
Bejerano, Abraham, to BASF Aktiengesellschaft. Transducer positioning apparatus. 4,270,155, Cl. 360-106.000.
Bell, Alan E., to RCA Corporation. Information record. 4,270,132, Cl. 346-135.100.
Bell Telephone Laboratories, Incorporated: *See*—
Beatenbough, Charles M., 4,269,463, Cl. 339-91.00R.
Brolin, Stephen J.; Gottesman, Jeffrey L.; Morgen, Dennis H.; and Swanson, Kenneth H., 4,270,030, Cl. 179-175.20D.
Cohen, Uri; and Sard, Richard, 4,269,671, Cl. 204-23.000.
Logan, Ralph A.; and Tsang, Won-Tien, 4,269,635, Cl. 148-171.000.
Smith, Craig G., 4,269,670, Cl. 204-15.000.
Bendix Corporation, The: *See*—
Drellishak, Glen J., 4,269,156, Cl. 123-478.000.
Van Arman, William L.; Kambs, Russell A.; Ivankovics, Steven G.; Hansen, Frederick W.; and Julow, Thomas M., 4,268,945, Cl. 29-407.000.
Van Siclen, Howard E., Jr., 4,269,152, Cl. 123-146.50A.
Bendix Corporation (Electrodynamics Div), The: *See*—
Charlton, John D., 4,270,180, Cl. 364-728.000.
Bennett, George J.: *See*—
Bejerano, Abraham; Bennett, George J.; and Arns, Harold E., 4,270,153, Cl. 360-78.000.
Benson, Clark K.: *See*—
Caridis, Andrew A.; Benson, Clark K.; Leary, Steven G.; and Nilsen, Arthur A., 4,269,861, Cl. 426-438.000.
Bentlage, Bernardus W. J.; and Spakman, Geert, to U.S. Philips Corporation. Electrical apparatus comprising a reversible front plate. 4,270,225, Cl. 455-347.000.
Benton, Charles M.; Arnold, Franklin D.; Forberg, Helge O.; Tuscher, Roger L.; and Evrad, Gerald D. Control of combustibility of volatile hydrocarbons and particulate matter in an exhaust gas stream by use of a high velocity burner in a carbon bake ring furnace. 4,269,592, Cl. 432-19.000.
Berger, Jurgen. Sump oil draining and collecting device. 4,269,237, Cl. 141-346.000.
Bergero, Jean-Pierre; Charlet, Yves; and Leschaeve, Philippe, to Thomson-CSF. Microwave acoustic wave oscillator. 4,270,100, Cl. 331-107.00A.
Berggren, Leif A., to Berggren, Torsten Lennart. Method and apparatus for beating fibre slurries. 4,269,362, Cl. 241-28.000.
Berggren, Torsten L. Beater mill. 4,269,365, Cl. 241-152.00A.
Berggren, Torsten Lennart: *See*—
Berggren, Leif A., 4,269,362, Cl. 241-28.000.
Berkowitz, Sidney, to FMC Corporation. Alkyl glyceryl ether sulfate salts and process for their preparation. 4,269,786, Cl. 260-458.00R.
Bernert, Bogdan W.: *See*—
Sivachenko, Eugene W.; Larkin, Artemas M.; and Bernert, Bogdan W., 4,269,055, Cl. 72-180.000.
Bernhagen, Wolfgang: *See*—
Weber, Jurgen; Bernhagen, Wolfgang; and Springer, Helmut, 4,270,008, Cl. 568-448.000.
Bernhardt, Winfried: *See*—
Grundmann, Edgard; and Bernhardt, Winfried, 4,269,040, Cl. 62-467.0PR.
Berry, Michael J.; and Barrett, Joseph J., to Allied Chemical Corporation. Photoacoustic Raman spectroscopy. 4,269,509, Cl. 356-301.000.
Berti, Jerome L., to Allis-Chalmers Corporation. Intercooler for internal combustion engine. 4,269,158, Cl. 123-563.000.
Bertone, Antonino: *See*—
Dotti, Giulio; Bertone, Antonino; and Roggero, Bruno, 4,269,224, Cl. 137-596.150.
Bessinger, Walter L., to Clarke-Gravely Corporation. Carpet cleaning machine. 4,268,935, Cl. 15-320.000.
Bethlehem Steel Corporation: *See*—
Strimple, Robert A.; Snyder, Joseph E.; and Shoemaker, Bruce F., 4,269,397, Cl. 266-44.000.
Bethurum, Gary C., to Thomas & Betts Corporation. Zero insertion force connector. 4,269,462, Cl. 339-74.00R.
Betzing, Hans: *See*—
Uhlendorf, Joachim; Betzing, Hans; Gabbar, Hamied; Graf, Erich; and Doppelfeld, Ille-Stephanie, 4,269,855, Cl. 424-285.000.
Beveridge, Harold N. Cylindrical speaker mechanism. 4,270,023, Cl. 179-1.0GA.
Beyer, Johann; and Strauber, Friedrich, to Siemens Aktiengesellschaft. Treatment head for electromedical diagnostic or therapeutic treatment of body parts. 4,269,176, Cl. 128-24.00A.
Beyler, Arthur L.: *See*—
Ferrari, Richard A.; and Beyler, Arthur L., 4,269,831, Cl. 424-241.000.
Bhushan, Bharat. Tractor/trailer safety device. 4,269,426, Cl. 280-432.000.
Bickel, Hans: *See*—
Peter, Heinrich; and Bickel, Hans, 4,269,977, Cl. 544-16.000.
Biggs, Eugene S. Quick release locking chuck mechanism. 4,269,422, Cl. 279-38.000.
Biller, Efim. Hydroquinone by hydrolysis of p-aminophenol or salts. 4,270,010, Cl. 568-767.000.
Bilofsky, Ruth C.; and Rogers, Howard G., to Polaroid Corporation. Photographic prints utilizing lamellar pigment materials. 4,269,916, Cl. 430-11.000.
Binkley Company, The: *See*—
Mattingly, John A.; and Mehta, Hasmukh S., 4,269,012, Cl. 52-394.000.
Birch, Robert J. Switching device. 4,269,033, Cl. 62-133.000.
Birr, Hans J., to Vorwerk & Co. Interholding GmbH. Safety arrangement for a mixer catch. 4,269,519, Cl. 366-206.000.
Bittner, Friedrich: *See*—
Hentschel, Klaus; Bittner, Friedrich; and Schreyer, Gerd, 4,269,979, Cl. 544-190.000.
Blackwell, John E.: *See*—
Stuttard, Edward B.; Blackwell, John E.; and Chao, Jessie, 4,270,202, Cl. 370-80.000.
Block, James P., to LCOA Laminating Company of America. Method for drilling circuit boards. 4,269,549, Cl. 408-1.00R.
Blommers, Elizabeth A.; Poole, William J.; and Ingram, Alvin R., to Arco Polymers, Inc. Antilumping expandable styrene polymers. 4,269,871, Cl. 427-222.000.
Blomsterberg, Karl-Ingemar. Anodic deburring or brightening of steel articles. 4,269,677, Cl. 204-129.400.
Blondel, Jacques; and Mahieu, Jean-Rene, to Thomson-CSF. Microwave down converter. 4,270,224, Cl. 455-327.000.
Bobier, Wilfred S. Fluid device. 4,269,574, Cl. 417-506.000.
Boeckmann, Eduard F.: *See*—
Sease, D. Lamar; Solow, Benjamin; Boeckmann, Eduard F.; and Rabinow, David, 4,268,954, Cl. 29-620.000.
Boeing Company, The: *See*—
McIntyre, Melville D., 4,269,073, Cl. 74-5.700.
Bohlander, Ernst: *See*—
Kopp, Josef; Huther, Ernst; and Bohlander, Ernst, 4,269,016, Cl. 53-546.000.
Bohn, Hans; and Winckler, Wilhelm, to Behringwerke AG. New glycoprotein and process for isolating it. 4,269,825, Cl. 424-85.000.
Bojesgard, Pehr; Kullendorff, Anders; and Wikner, Jan, to Stal-Laval Turbin AB. Combustion chamber. 4,269,151, Cl. 122-4.00D.
Bolex International SA: *See*—
Laurent, Francois, 4,269,484, Cl. 350-427.000.
Bollongino, Norbert: *See*—
Fitzky, Hans G.; Soder, Jorg M.; Schmitt, Franz; Bollongino, Norbert; and Rehrmann, Helmut, 4,270,083, Cl. 324-58.50C.
Bolt, Reginald C.: *See*—
Powell, Gordon F. W.; Bolt, Reginald C.; and Simmons, Albert, 4,269,201, Cl. 131-280.000.
Bonazza, Benedict R.; and DeVault, Albert N., to Phillips Petroleum Company. Fuel and lubricant additives from acid treated mixtures of vegetable oil derived amides and esters. 4,269,606, Cl. 44-63.000.
Bondoc, Alfredo A., to GAF Corporation. Novel glass fiber mat. 4,269,886, Cl. 428-219.000.
Bonnett, Robert N. Adapter for adapting signal lamp systems of towed and towing vehicles. 4,270,115, Cl. 340-67.000.
Bonomini, Vittorio; and Ruggeri, Giovanni. Hemodialysis and/or ultrafiltration apparatus. 4,269,708, Cl. 210-90.000.
Boogers, Wilhelmus P. L., to Arenco P.M.B. B.V. Method and device for stretching tobacco leaves or portions thereof. 4,269,202, Cl. 131-290.000.
Boone, Harold B. Portable workstand. 4,269,096, Cl. 83-477.200.

Boonstra, Alexander H.; Mutsaers, Cornelis A. H. A.; and Van der Kruijs, Franciscus N. G. R., to U.S. Philips Corporation. Resistance material. 4,269,898, Cl. 428-426.000.

Borchert, Herbert; Albert, Walter; Kohaut, Gunter; Schulte, Ulrich; and Rapp, Bruno, to Hoechst Aktiengesellschaft. Free-flowing packing material of foamed plastics particles. 4,269,895, Cl. 428-402.000.

Borcoman, Mircea. Production line for the manufacture of concrete elements. 4,269,577, Cl. 425-62.000.

Borden, Inc.: *See*—
Hickson, Charles H.; and Chandramouli, Pitchaiya, 4,269,949, Cl. 525-58.000.

Borg-Warner Corporation: *See*—
Kelbel, Donald W., 4,269,294, Cl. 192-54.000.
Kountz, Kenneth J.; Cooper, Kenneth W.; and Abendschein, Frederic H., 4,269,261, Cl. 165-2.000.

Borona, Russell T.; and Coley, Kenneth R., to Westinghouse Electric Corp. Circuit breaker interlocking mechanism. 4,270,031, Cl. 200-50.00C.

Borrelli, Nicholas F.; and Young, Peter L., to Corning Glass Works. Tin oxide, cadmium chloride doped silver chloride electron beam recording medium. 4,269,934, Cl. 430-296.000.

Borsig GmbH: *See*—
Holldorff, Gunther, 4,269,041, Cl. 62-476.000.

Boser, Ronald J.; and Watts, Henry J., to Union Special Corporation. Low inertia tandemly mounted presser mechanism. 4,269,128, Cl. 112-235.000.

Bosman, Peter B., to WLPU Holdings Limited. Packing in wet cooling towers and method of and means for supporting the packing. 4,269,795, Cl. 261-111.000.

Bosne, Jacques G. P. E.; and Chofflet, Christian A. A., to Hamon Sobelco. Fire control system for a gas and liquid contact apparatus. 4,269,794, Cl. 261-108.000.

Bostrom, Harry N. Stand structure. 4,269,878, Cl. 428-11.000.

Bott, John A. Luggage carrier with illuminating means. 4,269,339, Cl. 224-325.000.

Bottcher, Irmgard: *See*—
Niedballa, Ulrich; and Bottcher, Irmgard, 4,269,847, Cl. 424-273.00R.

Bottomley, Herbert G., to Landis Lund, Limited. Work clamping fixture. 4,269,001, Cl. 51-237.0CS.

Bouldin, Eric W.: *See*—
Drexler, Jerome; and Bouldin, Eric W., 4,269,917, Cl. 430-16.000.

Bouriotis, Vasilis: *See*—
Dean, Peter D. G.; Brown, Peter J.; and Bouriotis, Vasilis, 4,269,605, Cl. 23-230.00B.

Bower, Arnold B., Jr., to General Electric Company. Screen for particle separation. 4,269,704, Cl. 209-393.000.

Bowman, George A., to Motorola, Inc. Means for linearizing a voltage variable capacitor controlled oscillator. 4,270,098, Cl. 331-96.000.

Bowman, Harold M. Sectional ingot mold. 4,269,385, Cl. 249-82.000.

Bowthorpe-Hellermann Limited: *See*—
McCormick, Mathew, 4,269,379, Cl. 248-73.000.

Boyce, Elvin L. Method and apparatus for packaging sterile surgical masks. 4,269,315, Cl. 206-438.000.

Boyd, Raymond. Lighted hand mirror. 4,269,206, Cl. 132-79.00F.

Boynton, Kenneth G., to Cooper Industries, Inc. Solder flux and method. 4,269,870, Cl. 427-96.000.

Brady, Michael: *See*—
Lim, John; Huang, Warren; and Brady, Michael, 4,269,815, Cl. 423-328.000.

Bramberger, Bo C.; and Stenudd, Kurt G., to Sallander, Hakan. Method and apparatus for acoustical damping of punching machines and the like. 4,269,283, Cl. 181-207.000.

Brana, Lejo C.; and Scott, John W. Package sizer. 4,268,967, Cl. 33-1.00V.

Brand, Richard A., to General Dynamics Corporation. Method of crosslinking aromatic thermoplastic polymers using a biphenylene terminated compound. 4,269,953, Cl. 525-534.000.

Brand, Wilhelm: *See*—
Anders, Dietmar; and Brand, Wilhelm, 4,269,085, Cl. 74-665.0GA.

Brandman, Yigal: *See*—
Cohen, Yitzhak; Brandman, Yigal; and Eckstien, Zvi, 4,270,185, Cl. 364-900.000.

Brant, Robert J. Fluid pressure sleeve and rubber gasket pipe joint. 4,269,419, Cl. 277-34.300.

Braun AG: *See*—
Stemme, Walter, 4,269,908, Cl. 429-98.000.

Braun, Ernst; and Braun, Gert, to Halbach & Braun. Scraper chain conveyor assembly. 4,269,304, Cl. 198-735.000.

Braun, Gert: *See*—
Braun, Ernst; and Braun, Gert, 4,269,304, Cl. 198-735.000.

Brearley, Malcolm: *See*—
White, Alfred K.; and Brearley, Malcolm, 4,269,454, Cl. 303-97.000.

Breault, Richard D.: *See*—
DeCasperis, Anthony J.; Roethlein, Richard J.; and Breault, Richard D., 4,269,642, Cl. 156-89.000.

Brede, Uwe; Penner, Horst; and Zeiher, Erich, to Dynamit Nobel Aktiengesellschaft. Igniter element with a booster charge. 4,269,120, Cl. 102-202.000.

Breeden, John O. 'R.: *See*—
Goldman, Jerome L.; Breeden, John O. 'R.; and Michel, Walter H., 4,269,543, Cl. 405-198.000.

Breister, Sigmund: *See*—
Reiner, Joseph R.; and Breister, Sigmund, 4,269,621, Cl. 75-101.0BE.

Breitling, Rolf; Mayer, Wolfgang; and Labatzke, Wolfgang, to Daimler-Benz Aktiengesellschaft. Process and apparatus for introducing foam into automobile body cavities. 4,269,890, Cl. 428-320.000.

Brennan, James A.; Caesar, Philip D.; Ciric, Julius; Garwood, William E.; and Holland, Robert E., to Mobil Oil Corporation. Conversion of syngas to high octane olefinic naphtha. 4,269,783, Cl. 518-718.000.

Bressler, Peter W. Apparatus for inflating a deflated tire. 4,269,312, Cl. 206-303.000.

Bretl, Richard A.: *See*—
Meyer, Robert A.; and Bretl, Richard A., 4,269,265, Cl. 165-109.00T.

Brewer, Donaldee; and Dundon, Michael J., to Bandag Incorporated. Retreading stacked tires using inflatable pressure member. 4,269,643, Cl. 156-96.000.

Bridwell, Phillip P. Combination tool. 4,268,927, Cl. 7-143.000.

Bright Industries Inc.: *See*—
Sorrentino, Vincent P., 4,269,532, Cl. 403-191.000.

Bringol, Charles R., to International Business Machines Corporation. Alphanumeric CRT display system with unitary character formation and refresh. 4,270,124, Cl. 340-731.000.

Bristol-Myers Company: *See*—
Naito, Takayuki; Nakagawa, Susumu; Yamasaki, Tetsuro; Okita, Taka-aki; and Yamashita, Haruhiro, 4,269,839, Cl. 424-253.000.

British Industrial Plastics Limited: *See*—
Tranter, Harold W., 4,269,587, Cl. 425-451.900.

British Steel Corp.: *See*—
Strandell, Per O.; Thorslund, Erik M.; MacKenzie, Colin R.; and Smith, Norman, 4,268,948, Cl. 29-527.600.

Broberg, Hans; Douren, Lars; and Troeng, John, to Aktiebolaget Bofors. Device for concentration of mineral acids, particularly sulphuric acid. 4,269,655, Cl. 159-13.00A.

Brocklehurst, Charles E.: *See*—
Burton, Perry E.; and Brocklehurst, Charles E., 4,269,130, Cl. 112-262.300.

Brogardh, Torgny, to ASEA Aktiebolag. Apparatus for measuring pressure by absorption spectrum change. 4,270,050, Cl. 250-231.00R.

Brokaw, Adrian P., to Analog Devices, Incorporated. Parallel analog-to-digital converter. 4,270,118, Cl. 340-347.0AD.

Brokke, Mervin E.: *See*—
Pallos, Ferenc M.; Brokke, Mervin E.; and Arneklev, Duane R., 4,269,618, Cl. 71-88.000.

Brolin, Hans R. Attachment device. 4,269,531, Cl. 403-97.000.

Brolin, Stephen J.; Gottesman, Jeffrey L.; Morgen, Dennis H.; and Swanson, Kenneth H., to Bell Telephone Laboratories, Incorporated. Testing of subscriber loop pair gain systems. 4,270,030, Cl. 179-175.20D.

Bronstein-Bonte, Irena Y.: *See*—
Barton, Derek H. R.; Bronstein-Bonte, Irena Y.; and Taylor, Lloyd D., 4,269,925, Cl. 430-215.000.

Brossard, Michael E.; Heuer, Dale A.; and Wu, Philip T., to International Business Machines Corporation. Read only memory circuit. 4,270,189, Cl. 365-205.000.

Brother Kogyo Kabushiki Kaisha: *See*—
Kamiya, Osamu, 4,269,127, Cl. 112-122.000.

Brown Company: *See*—
Morse, Erwin E., 4,269,859, Cl. 424-362.000.

Brown Oil Tools, Inc.: *See*—
Baugh, Benton F., 4,269,277, Cl. 173-149.000.

Brown, Peter J.: *See*—
Dean, Peter D. G.; Brown, Peter J.; and Bouriotis, Vasilis, 4,269,605, Cl. 23-230.00B.

Brown, Richard L. E. Hand-held sail. 4,269,133, Cl. 114-103.000.

Bruckner Apparatebau: *See*—
Schuierer, Manfred, 4,269,047, Cl. 68-181.00R.

Bruderlein, Johannes, to Siebtechnik GmbH. Screening machine. 4,269,703, Cl. 209-243.000.

Bruins, Paul F.: *See*—
Gans, Leo; Bruins, Paul F.; Shapiro, Jay B.; and Rothman, Myron, 4,269,897, Cl. 428-419.000.

Brunel, Roger L.: *See*—
Hackman, Donald J.; Brunel, Roger L.; and Williams, Harry L., 4,269,383, Cl. 248-544.000.

Brunold, Andreas; Kroetzsch, Peter; and Diehl, Lothar, to BASF Aktiengesellschaft. Isolating fluorine compounds from the vapors obtained when evaporatively concentrating phosphoric acid. 4,269,609, Cl. 55-71.000.

Bruns, Klaus: *See*—
Hagen, Jens; and Bruns, Klaus, 4,270,007, Cl. 568-445.000.

Bryan, T. James: *See*—
Logie, James A.; Bryan, T. James; and Wilson, Arthur G., 4,270,147, Cl. 358-256.000.

Brymill Corporation: *See*—
Bryne, Michael D., 4,269,390, Cl. 251-254.000.

Bryne, Michael D., to Brymill Corporation. Cryosurgical instrument. 4,269,390, Cl. 251-254.000.

BS & B Safety Systems, Inc.: *See*—
Forsythe, Calvin C.; Strelow, John L.; and Clift, Miner E., 4,269,214, Cl. 137-68.00R.

Buchberger, Gregory D.: *See*—
Theis, Peter; Buchberger, Gregory D.; and Krueger, William J., 4,270,024, Cl. 179-8.00A.

Buckle, Allan S., to Lucas Industries Limited. Transistor protection circuits. 4,270,159, Cl. 361-79.000.

Buemi, Joseph M., Jr.: *See*—
Swartz, Harold L.; and Buemi, Joseph M., Jr., 4,270,077, Cl. 318-661.000.

Bulle, Marcel; and Vuillaume, Jean, to Timex Corporation. Connector pin for link bracelets. 4,269,026, Cl. 59-82.000.

Bunker Ramo Corporation: *See—*
Parks, Howard L.; and Kuronen, John M., 4,268,956, Cl. 29-869.000.

Burdorf, Walter L.: *See—*
Johnson, Donald C.; and Burdorf, Walter L., 4,269,881, Cl. 428-95.000.

Burgess, James B. Trench trash compactor. 4,269,562, Cl. 414-515.000.

Burkhardt, Claus: *See—*
Freitag, Dieter; Nouvertne, Werner; Burkhardt, Claus; and Kleiner, Frank, 4,269,964, Cl. 528-126.000.

Burner Systems International, Inc.: *See—*
Long, Kelso M.; Pharr, Leonard; and Pharr, Earl J., 4,269,094, Cl. 83-188.000.

Burns, James W.; and Shelton, John J., to Fife Corporation. Apparatus for positioning a coating thickness control roller in a web coating machine. 4,269,140, Cl. 118-665.000.

Burr Oak Tool & Gauge Company: *See—*
Franks, Lawrence A., 4,269,555, Cl. 414-27.000.

Burriat, Jean: *See—*
Barraque, Christian; Burriat, Jean; and Rovel, Jean-Marie, 4,269,715, Cl. 210-675.000.

Burton, Charles V.; and Lossing, Wallace W., to Abbot-Northwestern Hospitals Inc. Orthopedic gravity traction brace. 4,269,179, Cl. 128-75.000.

Burton, James A.; and Haber, Edgar, to Massachusetts General Hospital, The. Process and composition for reducing blood pressure. 4,269,827, Cl. 424-177.000.

Burton, Perry E.; and Brocklehurst, Charles E., to Opelika Manufacturing Corporation. Sheet production system. 4,269,130, Cl. 112-262.300.

Buttemer, David A. Activator units for identification systems and systems employing same. 4,270,187, Cl. 365-189.000.

Butterworth, Donald J.; Halbfoster, Christopher; and Loudon, Robert, to Ecodyne Corp. Apparatus and method. 4,269,707, Cl. 210-777.000.

Cadwell, Dennis J.: *See—*
Kmonk, Stanley; Cadwell, Dennis J.; and Ferlan, Stephen J., 4,269,661, Cl. 176-50.000.

Caesar, Philip D.: *See—*
Brennan, James A.; Caesar, Philip D.; Ciric, Julius; Garwood, William E.; and Holland, Robert E., 4,269,783, Cl. 518-718.000.

Cagle, Bunyan B. Solid fuel furnace. 4,269,349, Cl. 236-11.000.

Calpis Shokuhin Kogyo Kabushiki Kaisha: *See—*
Inagami, Kaoru; Ohmura, Kazutaka; Haruna, Masao; and Terabayashi, Takeshi, 4,269,863, Cl. 426-550.000.

Calvin, Douglas G.: *See—*
Howard, Curtis E.; and Calvin, Douglas G., 4,269,211, Cl. 137-2.000.

Campbell, John, Jr., to United States of America, Air Force. Liquid propellant/regenerative charging system bubble preventer. 4,269,107, Cl. 89-7.000.

Canadian Patents & Dev. Ltd.: *See—*
McCready, Ronald G. L.; Coleman, Richard D.; Capes, Charles E.; Kempton, Alan G.; and Moneib, Nayera A. M., 4,269,699, Cl. 75-101.00R.

Cannom, David L. Energy transmission devices. 4,270,114, Cl. 338-224.000.

Canon Kabushiki Kaisha: *See—*
Hamatani, Masahide, 4,269,479, Cl. 350-255.000.
Iakwa, Kazuo, 4,270,079, Cl. 320-1.000.
Mochizuki, Noritaka; and Hajimoto, Yoshioki, 4,270,047, Cl. 250-216.000.
Suzuki, Ryoichi; Kinoshita, Takao; Ogawa, Yukio; and Uchiyama, Takashi, 4,269,493, Cl. 354-51.000.
Takimoto, Hiroyuki, 4,269,489, Cl. 352-174.000.
Tanaka, Hiroshi; and Tsuneda, Terukuni, 4,269,921, Cl. 430-119.000.
Watanabe, Tsuyoshi; Murase, Hidetoshi; Murayama, Akira; and Nakasugi, Mikio, 4,268,943, Cl. 29-131.000.

Cantos, Earl J., Jr. Hand flute and percussion instrument. 4,269,104, Cl. 84-330.000.

Capes, Charles E.: *See—*
McCready, Ronald G. L.; Coleman, Richard D.; Capes, Charles E.; Kempton, Alan G.; and Moneib, Nayera A. M., 4,269,699, Cl. 75-101.00R.

Capula, Pietro. Pressure-sensitive signalling device for detecting intrusion into an enclosed area. 4,270,122, Cl. 340-566.000.

Caridis, Andrew A.; Benson, Clark K.; Leary, Steven G.; and Nilsen, Arthur A., to Heat and Control, Inc. Process for preparing french fried potatoes and apparatus. 4,269,861, Cl. 426-438.000.

Carlo Erba Strumentazione S.p.A.: *See—*
Sisti, Giorgio; Trestianu, Sorin; and Galli, Mario, 4,269,608, Cl. 55-67.000.

Carlon, Hugh R.; and Pritt, Rex M., to United States of America, Army. Apparatus and method for determining electrical conductivity of water vapor. 4,270,084, Cl. 324-65.00R.

Carpenter, Ronnie L.; and Cathell, Frank, to Qualidyne Systems, Inc. Controller for d.c. current supplied by a plurality of parallel power supplies. 4,270,165, Cl. 363-65.000.

Carr, Richard P.; Nanda, Ashok K.; Schneider, Charles A.; and Malhotra, Girish K., to Sherwin-Williams Company, The. Purification of triazoles. 4,269,987, Cl. 548-257.000.

Carrier Corporation: *See—*
Hile, James R., 4,268,947, Cl. 29-451.000.

Carrillo, Robert M.; and Koss, Muriel L., to Rohr Industries, Inc. Method of manufacturing of honeycomb noise attenuation structure and the structure resulting therefrom. 4,269,882, Cl. 428-116.000.

Carter Equipment Co., Inc.: *See—*
Carter, William D.; and Mueller, Martin S., 4,269,370, Cl. 242-56.00A.

Carter, Jack L.: *See—*
Flanagan, James P.; and Carter, Jack L., 4,269,217, Cl. 137-183.000.

Carter, Raymond D.; and Clark, Allen L., to Aro Corporation, The. Resettable pneumatic overrun control valve. 4,269,223, Cl. 137-460.000.

Carter, William D.; and Mueller, Martin S., to Carter Equipment Co., Inc. Apparatus for continuous automatic spooling of motion picture film. 4,269,370, Cl. 242-56.00A.

Case, John M. Electronic funds transfer system. 4,270,042, Cl. 235-379.000.

Cash, Charles. Hand weapon for survival purposes. 4,268,987, Cl. 42-1.00R.

Caterpillar Tractor Co.: *See—*
Drazy, James W., 4,269,553, Cl. 409-232.000.
Linne, Terry D., 4,269,802, Cl. 264-255.000.

Cathell, Frank: *See—*
Carpenter, Ronnie L.; and Cathell, Frank, 4,270,165, Cl. 363-65.000.

Cavallino, Francesco; Martinez, Pasquale; Allione, Michele; and Schiavuzzi, Roberto, to Fiat Auto S.p.A. Internal combustion engine with exhaust emission control system. 4,269,029, Cl. 60-293.000.

Cavan, Donald R., Jr. End tab file folder storage file. 4,269,347, Cl. 229-33.000.

Cavanagh, John R.: *See—*
Clingman, David L.; Cavanagh, John R.; Schechter, Berton; and Cross, Kenneth R., 4,269,903, Cl. 428-591.000.

Cazes, Lyle C. Plow attachment assembly for a crawler-type tractor. 4,269,276, Cl. 172-832.000.

CBS Records ApS: *See—*
Grejsner, Teddy, 4,269,739, Cl. 252-547.000.

Celanese Corporation: *See—*
Edelman, Robert, 4,269,759, Cl. 260-42.170.
Vanderspurt, Thomas H.; and Zema, Paul M., 4,269,781, Cl. 260-410.90R.

Censor Patent-und Versuchs-Anstalt: *See—*
Mayer, Herbert E., 4,269,505, Cl. 355-62.000.

Central Glass Company, Limited: *See—*
Asagao, Soichi; Nakatani, Masaru; Nakagawa, Shinsuke; Takahara, Yoshiyuki; and Okada, Naoki, 4,269,814, Cl. 423-308.000.

Centro Ricerche Fiat S.p.A.: *See—*
Dotti, Giulio; Bertone, Antonino; and Roggero, Bruno, 4,269,224, Cl. 137-596.150.

Cerberus Ag: *See—*
Horvath, Zoltan; Muggli, Jurg; Ackermann, Hans; and Tresch, Erwin, 4,269,510, Cl. 356-338.000.

Ceskoslovenska akademie ved: *See—*
Kalal, Jaroslav; Bednar, Bohumil; Zachoval, Jaromir; Petr, Jiri; Pelcbauer, Zdenek; and Svec, Frantisek, 4,269,962, Cl. 526-273.000.

Ceuppens, Willy G.: *See—*
Umans, Frans M.; Ceuppens, Willy G.; Palmans, Willy J.; and Overmeer, Robert T., 4,269,594, Cl. 432-59.000.

Chaki, Takao; and Akasaka, Chuji. Changeover mechanism for push-button tuner. 4,269,074, Cl. 74-10.330.

Chamberlain, Francis N. Device for protection against fire. 4,269,901, Cl. 428-542.000.

Chamberlin, Kim S.: *See—*
Cheng, Dah-Chieh O.; and Chamberlin, Kim S., 4,269,985, Cl. 548-191.000.

Champion International Corporation: *See—*
Dutcher, Daniel P., 4,269,346, Cl. 229-21.000.

Chan, David C. K., to Chevron Research Company. Fungicidal 3-(N-cycloalkylcarbonyl-N-arylamino)-gamma-butyrolactones and gamma-butyrothiolactones. 4,269,849, Cl. 424-275.000.

Chan, David C. K.; and Whipp, Arthur A., to Chevron Research Company. Mite and mite ovicidal compositions. 4,269,856, Cl. 424-321.000.

Chandramouli, Pitchaiya: *See—*
Hickson, Charles H.; and Chandramouli, Pitchaiya, 4,269,949, Cl. 525-58.000.

Chang, Daniel M.: *See—*
Woods, Martin E.; and Chang, Daniel M., 4,269,740, Cl. 260-4.00R.

Chao, Jessie: *See—*
Stuttard, Edward B.; Blackwell, John E.; and Chao, Jessie, 4,270,202, Cl. 370-80.000.

Charles, Earl, Jr.: *See—*
Charles, Roger D.; Charles, Earl, Jr.; and Stedman, Robert C., 4,269,565, Cl. 415-76.000.

Charles, Roger D.; Charles, Earl, Jr.; and Stedman, Robert C. Turbine wheel. 4,269,565, Cl. 415-76.000.

Charles Stark Draper Laboratory, Inc., The: *See—*
Elwell, John M., Jr., 4,270,044, Cl. 250-201.000.

Charlet, Yves: *See—*
Bergero, Jean-Pierre; Charlet, Yves; and Leschaeve, Philippe, 4,270,100, Cl. 331-107.00A.

Charlton, John D., to Bendix Corporation (Electrodynamics Div), The. Delay line time compression correlation circuit. 4,270,180, Cl. 364-728.000.

Chatterjee, Pallab K.; and Tasch, Al F., Jr., to Texas Instruments Incorporated. Post-metal ion implant programmable MOS read only memory. 4,268,950, Cl. 29-571.000.

Chemische Werke Heuls, A.G.: *See—*
Gorke, Klaus; and Bartz, Wilfried, 4,269,626, Cl. 106-18.320.

Chen, Nai Y.; and Shihabi, David S., to Mobil Oil Corporation. Low pour point heavy oils. 4,269,697, Cl. 208-120.000.

Cheng, Dah-Chieh O.; and Chamberlin, Kim S., to Eastman Kodak Company. Process for the preparation of 2-amino-5-nitrothiazole. 4,269,985, Cl. 548-191.000.

Cherouge, Dominique, to Compagnie Industrielle des Piles Electriques "Cipel". Beacon lamp. 4,270,162, Cl. 362-311.000.

Chevron Research Company: *See—*
Chan, David C. K., 4,269,849, Cl. 424-275.000.
Chan, David C. K.; and Whipp, Arthur A., 4,269,856, Cl. 424-321.000.
de Vries, Louis, 4,269,790, Cl. 260-543.00F.

Chigusa, Koichi: *See—*
Mashiki, Nobuo; and Chigusa, Koichi, 4,269,533, Cl. 403-410.000.

Chimura, Kozo: *See—*
Ogihara, Masuo; Chimura, Kozo; Shinozaki, Nobuo; and Seki, Yoichi, 4,270,195, Cl. 368-74.000.

Chirafisi, Dominick J.; and Melachouris, Nicholas, to Stauffer Chemical Company. Milk replacer for caramels. 4,269,864, Cl. 426-583.000.

Chirskov, Vladimir G.: *See—*
Unigovsky, Mikhail R.; Rulevsky, Evgeny V.; Arendt, Georgy A.; Chirskov, Vladimir G.; Konovalov, Julian K.; Ivanov, Vasily T.; Nemirovsky, Isaak Y.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; and Kheinis, Alexandr B., 4,269,552, Cl. 409-140.000.

Chisso Corporation: *See—*
Ejima, Shozo; Tomioka, Susumu; Matsumoto, Tadao; and Hane, Naruaki, 4,269,888, Cl. 428-296.000.
Ohtake, Nobumasa; Koga, Isao; and Terui, Yohji, 4,269,993, Cl. 556-450.000.

Chodosh, Edward, to Roldwest Limited. Printing and pleating. 4,269,334, Cl. 223-28.000.

Chofflet, Christian A. A.: *See—*
Bosne, Jacques G. P. E.; and Chofflet, Christian A. A., 4,269,794, Cl. 261-108.000.

Christensen, Burton G.; Johnston, David B. R.; and Schmitt, Susan M., to Merck & Co., Inc. 2-, 5-, and 6-Substituted-1-carbadethiapen-2-em-3-carboxylic acids. 4,269,873, Cl. 424-274.000.

Christiaen, Lucien A.: *See—*
Verkinderen, Paul A.; Verhoeven, Ludovicus H.; Christiaen, Lucien A.; Pira, Camille F.; and Marckx, Michel L., 4,269,647, Cl. 156-157.000.

Christian Majer KG Maschinenfabrik: *See—*
Hodapp, Otto; and Lindner, Ulrich, 4,269,091, Cl. 82-48.000.

Christopherson, Warren A., to International Business Machines Corporation. Current controlling circuitry for logical circuit reference electric level circuitry. 4,270,092, Cl. 330-257.000.

Chrysler Corporation: *See—*
Peck, Clifton S., 4,269,459, Cl. 308-36.400.

Ciba-Geigy Aktiengesellschaft: *See—*
Mason, Leslie F. A.; Kitzing, Rainer; Whitear, Brian R. D.; Long, William E.; Wood, Glenn P.; and Reeves, David L. R., 4,269,928, Cl. 430-239.000.

Ciba-Geigy Corporation: *See—*
Peter, Heinrich; and Bickel, Hans, 4,269,977, Cl. 544-16.000.
Petitpierre, Jean C., 4,269,978, Cl. 544-133.000.
Roueche, Armand, 4,269,976, Cl. 542-445.000.
Szczepanski, Henry; Martin, Henry; Fory, Werner; and Pissiotas, Georg, 4,269,775, Cl. 260-340.700.

Cincinnnati Rotary Press Company: *See—*
Nickum, Robert H., 4,269,093, Cl. 83-174.000.

CIR-S.p.A.-Divisione SASIB: *See—*
Goodman, Hubert C., Jr., 4,269,299, Cl. 198-347.000.

Ciric, Julius: *See—*
Brennan, James A.; Caesar, Philip D.; Ciric, Julius; Garwood, William E.; and Holland, Robert E., 4,269,783, Cl. 518-718.000.

Citizen Watch Company Limited: *See—*
Ichikawa, Singo, 4,270,193, Cl. 368-47.000.
Morokawa, Shigeru; Sekiya, Fukuo; Hashimoto, Yukio; Nomura, Yasushi; and Koga, Keiichiro, 4,270,194, Cl. 368-73.000.

Claeys, Daniel A.: *See—*
Janssens, Wilhelmus; Somers, Alphonse; and Claeys, Daniel A., 4,269,924, Cl. 430-214.000.

Clark, Allen L.: *See—*
Carter, Raymond D.; and Clark, Allen L., 4,269,223, Cl. 137-460.000.

Clark, Carl A.; and Clark, Kathleen J. Thumb hair gauge. 4,269,205, Cl. 132-45.00R.

Clark, Charles A., Jr., to RCA Corporation. Digital data compression circuit. 4,270,127, Cl. 343-5.00W.

Clark, Charles A., Jr., to RCA Corporation. Power supply protection circuit. 4,270,157, Cl. 361-35.000.

Clark, John F., to Aluminum Company of America. Anode mount. 4,269,673, Cl. 204-67.000.

Clark, Kathleen J.: *See—*
Clark, Carl A.; and Clark, Kathleen J., 4,269,205, Cl. 132-45.00R.

Clark, Robert N. Ultrasonic detector apparatus. 4,269,065, Cl. 73-587.000.

Clark, Stanley M. Therapeutic device. 4,269,177, Cl. 128-57.000.

Clarke-Gravely Corporation: *See—*
Bessinger, Walter L., 4,268,935, Cl. 15-320.000.

Clarke, Robin; Thomas, Douglas J.; Kilmister, George T. F.; and Beal, Robert R., to Loewy Robertson Engineering Co. Ltd. Rolling mills and operation thereof. 4,269,051, Cl. 72-9.000.

Clean-Tex A/S: *See—*
Sorensen, Finn L.; and Neubert, Robert, 4,268,929, Cl. 8-151.000.

Clelford, Douglas H.: *See—*
Murphy, Richard D.; and Clelford, Douglas H., 4,270,168, Cl. 364-200.000.

Cleveland, Richard T.: *See—*
Silk, Murray R.; and Cleveland, Richard T., 4,269,695, Cl. 208-111.000.

Clift, Miner E.: *See—*
Forsythe, Calvin C.; Strelow, John L.; and Clift, Miner E., 4,269,214, Cl. 137-68.00R.

Clingman, David L.; Cavanagh, John R.; Schechter, Berton; and Cross, Kenneth R., to General Motors Corporation. Abradable ceramic seal and method of making same. 4,269,903, Cl. 428-591.000.

Coates, William R., Jr.; and Vance, M. William, to United States Steel Corporation. Recuperator tube construction. 4,269,266, Cl. 165-142.000.

Coca-Cola Company, The: *See—*
Barrash, Marshall J., 4,269,314, Cl. 206-428.000.

Coe, David J., to U.S. Philips Corporation. Field-effect devices. 4,270,137, Cl. 357-53.000.

Coffey, Fred S., to Owens-Corning Fiberglas Corporation. Apparatus for chopping strands. 4,268,936, Cl. 19-0.560.

Coffey, J. E.: *See—*
Newman, Aubrey W.; Coffey, J. E.; and Whitney, Arthur D., 4,269,686, Cl. 204-212.000.

Coffey, Valerie J.: *See—*
Lind, David J.; Coffey, Valerie J.; and Hallam, Joyce, 4,269,876, Cl. 427-309.000.

Cohen, Robert D.: *See—*
Baxter, Larry K.; Cohen, Robert D.; Ain, Mark S.; and Apsell, Sheldon P., 4,270,043, Cl. 235-419.000.

Cohen, Uri; and Sard, Richard, to Bell Telephone Laboratories, Incorporated. Electroplating of silver-palladium alloys and resulting product. 4,269,671, Cl. 204-23.000.

Cohen, Yitzhak; Brandman, Yigal; and Eckstien, Zvi, to Motorola Israel Limited. Memory control circuitry for a supervisory control system. 4,270,185, Cl. 364-900.000.

Cole Consumer Products, Inc.: *See—*
Reinschreiber, Merwyn R., 4,268,960, Cl. 30-161.000.

Coleman, Donald C.: *See—*
Peterson, James F.; Crabtree, Joe; and Coleman, Donald C., 4,269,081, Cl. 74-473.00R.

Coleman, Richard D.: *See—*
McCready, Ronald G. L.; Coleman, Richard D.; Capes, Charles E.; Kempton, Alan G.; and Moneib, Nayera A. M., 4,269,699, Cl. 75-101.00R.

Coley, Kenneth R.: *See—*
Borona, Russell T.; and Coley, Kenneth R., 4,270,031, Cl. 200-50.00C.

Colgate-Palmolive Co.: *See—*
Baines, Eric; and Harvey, Kenneth, 4,269,823, Cl. 424-52.000.
Joshi, David; and Klingaman, Richard, 4,269,722, Cl. 252-90.000.

Collard, Jean-Claude, to Universal Det. S.A.R.L. Detector for indicating a fire or detector malfunction. 4,270,123, Cl. 340-629.000.

Collins, Arthur A.; Bayless, Jon W., Sr.; and Pedersen, Robert D., to Arthur A. Collins, Inc. Timing adjustment circuit for digital switching. 4,270,203, Cl. 370-102.000.

Collins, Joseph A. Train derail emergency brake system. 4,269,288, Cl. 188-33.000.

Colt Industries Operating Corp.: *See—*
Smitley, Marion L., 4,269,062, Cl. 73-118.000.

Coltrin, Michael E.; and Wu, Yulin, to Phillips Petroleum Company. Process for producing hydroperoxides. 4,269,734, Cl. 252-430.000.

Colucci, William: *See—*
Stephenson, George M.; and Colucci, William, 4,269,630, Cl. 134-26.000.

Colville, Hume W. Land surfacing apparatus. 4,269,273, Cl. 172-397.000.

Combustion Engineering, Inc.: *See—*
Mellinger, Gerald A., 4,269,125, Cl. 110-171.000.
Rockwell, Dale L., 4,269,799, Cl. 264-85.000.

Combustion Unlimited Incorporated: *See—*
Straitz, John F., III, 4,269,583, Cl. 431-202.000.

Commissariat a l'Energie Atomique: *See—*
Coppa, Louis; and Levy, Jacques, 4,269,558, Cl. 414-146.000.
Pleyber, Gaetan, 4,270,041, Cl. 235-92.0MT.

Compagnie Industrielle des Piles Electriques "Cipel": *See—*
Cherouge, Dominique, 4,270,162, Cl. 362-311.000.

Conkey, Walter J. Compartment door holder for recreational vehicles. 4,268,997, Cl. 49-383.000.

Conn, John L. Container with tube closure assembly. 4,269,332, Cl. 222-475.000.

Conoco, Inc.: *See—*
Leach, Bruce E., 4,269,735, Cl. 252-440.000.
Theodore, Frank W., 4,269,662, Cl. 202-100.000.

Consolidated Medical Equipment Inc.: *See—*
Abraham, William W., 4,269,189, Cl. 128-303.130.

Container Corporation of America: *See—*
Young, Harry E., 4,269,348, Cl. 229-52.00B.

Contour-Concepi, Inc.: *See—*
Hughes, J. Walter, 4,269,412, Cl. 273-81.300.

Contraves Goerz Corporation: *See*—
Wyman, Kenneth R.; and Gallagher, Gerard A., 4,270,164, Cl. 363-56.000.

Cook, Jack E., to Minnesota Mining and Manufacturing Company. Security label. 4,268,983, Cl. 40-2.200.

Cooper Industries, Inc.: *See*—
Boynton, Kenneth G., 4,269,870, Cl. 427-96.000.

Cooper, Kenneth W.: *See*—
Kountz, Kenneth J.; Cooper, Kenneth W.; and Abendschein, Frederic H., 4,269,261, Cl. 165-2.000.

Coors Container Company: *See*—
Robertson, King G.; and McAuliffe, Donald C., 4,269,632, Cl. 148-2.000.

Coppa, Louis; and Levy, Jacques, to Commissariat a l'Energie Atomique. Apparatus for introducing a fuel element into a fuel assembly of a nuclear reactor. 4,269,558, Cl. 414-146.000.

Corbett, Lacey O. Anti-smoking device. 4,269,203, Cl. 131-270.000.

Cordier, Andre G., to Air Industrie. Enclosures for the treatment of workpieces. 4,269,112, Cl. 98-115.0SB.

Cordis Corporation: *See*—
Zick, Gregory L., 4,269,684, Cl. 204-195.00R.

Cordis Dow Corp.: *See*—
Hornby, Roger B.; Lipps, Bennie J.; and Savage, Charles E., 4,269,712, Cl. 210-321.300.

Cornell, Cyrus J. Wood conveyor apparatus. 4,269,303, Cl. 198-688.000.

Corning Glass Works: *See*—
Borrelli, Nicholas F.; and Young, Peter L., 4,269,934, Cl. 430-296.000.

Cornu, Dominique. Machine for pulling endives and other tap roots. 4,269,272, Cl. 171-116.000.

Costin, Charles R., to Rohm and Haas Company. Thermally stable resins prepared by bromination or chlorination of aromatic polymer beads followed by sulphonation. 4,269,943, Cl. 521-33.000.

Costruzioni Meccaniche Lonati S.p.A.: *See*—
Lonati, Francesco, 4,269,044, Cl. 66-56.000.

Cotey, John; and Volpe, Lee S., to Quaker Oats Company, The. Soft flexible articulated doll. 4,268,991, Cl. 46-163.000.

Coulson, Blanche E. Height-adjustable rear view hair styling mirror. 4,269,382, Cl. 248-472.000.

Coulter Systems Corporation: *See*—
Kuehnle, Manfred R., 4,269,919, Cl. 430-67.000.

Cousin, Lucien. Replaceable edge bit assembly. 4,269,275, Cl. 172-719.000.

Cowan, William S., to Armco Inc. Hanger apparatus for suspending pipes with positive retrieval capability. 4,269,268, Cl. 166-208.000.

Cox, Eugene R.: *See*—
Rivoli, Anthony L.; Morcom, William R.; Nicolay, Hugh C.; and Cox, Eugene R., 4,269,636, Cl. 148-175.000.

Crabtree, Joe: *See*—
Peterson, James F.; Crabtree, Joe; and Coleman, Donald C., 4,269,081, Cl. 74-473.00R.

Craig, William R. Roof truss suspension. 4,269,442, Cl. 294-81.00R.

Crane Co.: *See*—
Skarvada, Thomas, 4,270,176, Cl. 364-565.000.

Crawford, John E. Head selection technique. 4,270,154, Cl. 360-98.000.

Crimaldi, Daniel. Motion producing mechanism. 4,269,122, Cl. 104-167.000.

Crist, Gerald L.; and Flora, Arlen E. Coupling arrangement for detachably connecting a driven unit to a drive unit. 4,269,075, Cl. 74-16.000.

Cross, Kenneth R.: *See*—
Clingman, David L.; Cavanagh, John R.; Schechter, Berton; and Cross, Kenneth R., 4,269,903, Cl. 428-591.000.

Crouse-Hinds Company: *See*—
Perretta, Michael L., 4,270,161, Cl. 362-249.000.

Crowe, Donald R., to Sargent Industries, Inc. Valve assembly. 4,269,386, Cl. 251-74.000.

Crown Unlimited Machines, Inc.: *See*—
Stroup, Steven L., 4,269,369, Cl. 242-45.000.

Cunningham, Percy C. Grass sports surfaces and a method for maintaining them. 4,268,993, Cl. 47-58.000.

Curran, Thomas F. Draw transmission. 4,269,600, Cl. 474-69.000.

Custom Concepts, Incorporated: *See*—
Kubiatowicz, James F., 4,268,990, Cl. 46-119.000.

Cutler, John H.: *See*—
Walker, Loren H.; and Cutler, John H., 4,270,078, Cl. 318-803.000.

Cutore, Gaetano. Unit adapted to be completely hidden in the ground and intended to be used in aircraft refuelling operations. 4,269,240, Cl. 141-392.000.

DAF Indal Ltd.: *See*—
Saeed, Amin; and Hill, James B., 4,269,384, Cl. 248-548.000.

Dai Nippon Insatsu K.K.: *See*—
Arai, Eisuke; Kamei, Kuniaki; Kawasaki, Akio; Takagi, Fumio; Shirai, Koichi; and Orihara, Yasuharu, 4,269,650, Cl. 156-540.000.

Daicel Ltd.: *See*—
Yabune, Hideo; and Ikemoto, Yoshiyuki, 4,269,972, Cl. 536-71.000.

Daigle, Oscar L.: *See*—
Keil, Howard R.; and Daigle, Oscar L., 4,269,619, Cl. 75-1.00T.

Daimler-Benz Aktiengesellschaft: *See*—
Altmann, Werner, 4,269,086, Cl. 74-711.000.
Breitling, Rolf; Mayer, Wolfgang; and Labatzke, Wolfgang, 4,269,890, Cl. 428-320.000.
Konig, Karl; and Heldmaier, Emil, 4,269,425, Cl. 280-403.000.

Dainippon Screen Seizo Kabushiki Kaisha: *See*—
Sakamoto, Takashi, 4,270,141, Cl. 358-78.000.

Dakss, Mark L.; Kim, Bumman; and Schlafer, John, to GTE Laboratories Incorporated. Method for mounting microsphere coupling lenses on optical fibers. 4,269,648, Cl. 156-293.000.

Dall, Desmond M.; and Miles, Anthony W. Bone fastener for the greater trochanter. 4,269,180, Cl. 128-92.00B.

Dampney Company, The: *See*—
Davis, Murray L., 4,269,879, Cl. 428-36.000.

D'Andrade, Bruce M., to Arco Industries Ltd. Toy aeroplane flight simulating console. 4,269,596, Cl. 434-32.000.

Danfoss A/S: *See*—
Nygaard, Nils H., 4,270,075, Cl. 318-254.000.
Nygaard, Nils H., 4,270,076, Cl. 318-254.000.

Daniel, James W., Jr., to RCA Corporation. Phaselocked receiver with orderwire channel. 4,270,221, Cl. 455-208.000.

Daniels Manufacturing Corp.: *See*—
Daniels, William A., 4,268,955, Cl. 29-747.000.

Daniels, William A., to Daniels Manufacturing Corp. Contact insertion and removal tool. 4,268,955, Cl. 29-747.000.

Dart Industries Inc.: *See*—
Gaylord, N. Grant, 4,269,958, Cl. 526-192.000.
Gaylord, Norman G.; and Nagler, Meshulam, 4,269,956, Cl. 526-192.000.
Gaylord, Norman G.; Nagler, Meshulam; and Fein, Marvin M., 4,269,957, Cl. 526-192.000.
Gaylord, Norman G., 4,269,960, Cl. 526-213.000.
Hulyalkar, Ramchandra K.; and Baum, Gerald A., 4,269,743, Cl. 260-23.0XA.
Hulyalkar, Ramchandra K.; and Baum, Gerald A., 4,269,744, Cl. 260-23.0XA.

Dataproducts Corporation: *See*—
Jezbera, Val K., 4,269,118, Cl. 101-93.340.

Davies, George E.; and Foulkes, David M., to Imperial Chemical Industries Limited. Safeguarded toxic chemical compositions containing effective emesis-inducing S-triazolo-[1,5-α]pyrimidine derivatives. 4,269,820, Cl. 424-10.000.

Davis, Bernard J.: *See*—
Wada, Akira; and Davis, Bernard J., 4,269,747, Cl. 260-27.0BB.

Davis, Murray L., to Dampney Company, The. Solventless epoxy-based coating composition, method of applying and article coated therewith. 4,269,879, Cl. 428-36.000.

Davis, William W.; and Griffith, Ernest S., to Sperry Corporation. High impedance tap for tapped bus transmission systems. 4,270,214, Cl. 455-80.000.

Davy Powergas GmbH: *See*—
Keunecke, Gerhard; and Krimphove, Herbert, 4,269,776, Cl. 260-346.400.

Dawson, Sylvan L.: *See*—
Ziegelbein, Paul J.; Dawson, Sylvan L.; and Erickson, Gerald A., 4,270,117, Cl. 340-168.00B.

Dean, Peter D. G.; Brown, Peter J.; and Bouriotis, Vasilis, to Amicon Corporation. Method and kit for separation of glycoproteins. 4,269,605, Cl. 23-230.00B.

Dearing, Le Roy M., to L. M. Dearing Associates. Camera with back-up shutter and provisions for recording data in conjunction with a primary image. 4,269,495, Cl. 354-106.000.

DeBernardis, John F.; and Kyncl, John J., to Abbott Laboratories. Antihypertensive method. 4,269,858, Cl. 424-330.000.

Deborski, Gary A., to Dow Chemical Company, The. Oxygen electrode preparation. 4,269,691, Cl. 204-290.00R.

deBuhr, Harold E.; and Suechting, Henry W., to Deere & Company. Harvester header with a main frame of modular subframes. 4,269,017, Cl. 56-106.000.

DEC International, Inc.: *See*—
Erbach, Thomas W., 4,269,143, Cl. 119-14.490.

DeCasperis, Anthony J.; Roethlein, Richard J.; and Breault, Richard D., to United Technologies Corporation. Method of forming densified edge seals for fuel cell components. 4,269,642, Cl. 156-89.000.

Deckert, Cheryl A.; and Schnable, George L., to RCA Corporation. Silicon nitride and silicon oxide etchant. 4,269,654, Cl. 156-657.000.

Deelman, Hayo E.; and Porritt, Gordon S., to Windsor Machine Company Limited. Saw chain. 4,269,100, Cl. 83-834.000.

Deere & Company: *See*—
deBuhr, Harold E.; and Suechting, Henry W., 4,269,017, Cl. 56-106.000.
Dobberpuhl, Dale R., 4,270,032, Cl. 200-61.850.
Gorsler, Karl G., 4,269,200, Cl. 130-27.00T.

Degawa, Sadao: *See*—
Tanaka, Masaya; Ono, Mitsuo; and Degawa, Sadao, 4,270,049, Cl. 250-227.000.

de Gomez, Mabel A. S.: *See*—
Villamarin, Arturo A.; and de Gomez, Mabel A. S., 4,269,824, Cl. 424-70.000.

De Graw, Joseph I.; Lawson, John A.; Johnson, Howard L.; and Loew, Gilda H., to SRI International; and Leland Stanford Jr. University, The Board of Trustees of. N-Sec-alkyl analogs of norcodeine and normorphine and analgesic compositions and methods employing the normorphine derivatives. 4,269,843, Cl. 424-260.000.

Degremont: *See*—
Barraque, Christian; Burriat, Jean; and Rovel, Jean-Marie, 4,269,715, Cl. 210-675.000.

Delannoy, Robert, to Molinier S.A. Tubular dressing which is complete by itself. 4,269,181, Cl. 128-156.000.

Delbrouck, Klaus. Dispensing compartment, in particular for refrigerating units. 4,269,326, Cl. 221-227.000.

DellaVecchia, Michael P.; Mackey, Joseph E.; and Steinberg, Albert H., to Allied Chemical Corporation. Fiber reinforced multi-ply stampable thermoplastic sheet. 4,269,884, Cl. 428-131.000.

del Rio, Salvador M., to Mineral Industries Engineers, Inc. Method for preparing an oil shale deposit for in situ retorting. 4,269,449, Cl. 299-2.000.

De Luca, Hector F.; Schnoes, Heinrich K.; Napoli, Joseph L.; and Fivizzani, Mary A., to Wisconsin Alumni Research Foundation. Isotopically labeled vitamin D derivatives and processes for preparing same. 4,269,777, Cl. 260-397.100.

Den, Hiroshi: *See*—
Shima, Eiji; Shimizu, Masao; and Den, Hiroshi, 4,269,380, Cl. 248-74.00R.

Denzel, Theodor; and Hoehn, Hans, to E. R. Squibb & Sons, Inc. 4H-Pyrazolo[4',3':5,6]pyrido[4,3-d][1,2,4]triazolo[3,2-b]-pyrimidin-5(8H)one and derivatives thereof. 4,269,836, Cl. 424-246.000.

DePalma, Ted V.: *See*—
Bailey, Charles H.; DePalma, Ted V.; and Dillon, James E., 4,269,807, Cl. 422-179.000.

Depin, Jean-Claude: *See*—
Bayssat, Michel; Sautel, Francis; Depin, Jean-Claude; and Matibet, Annie B., 4,269,848, Cl. 424-275.000.

Deseret Company, The: *See*—
Loveless, James C.; and Palmer, Darrel R., 4,269,186, Cl. 128-214.400.

DeShon, Wallace E., to Phillips Petroleum Company. Serial line communication system. 4,270,205, Cl. 371-32.000.

Desmond, Richard J., to General Electric Company. Enhanced thermal transfer package for a semiconductor device. 4,270,138, Cl. 357-81.000.

Deutsch, Leslie J.: *See*—
Deutsch, Ralph; and Deutsch, Leslie J., 4,269,101, Cl. 84-1.010.

Deutsch, Ralph; and Deutsch, Leslie J., to Kawai Musical Instrument Mfg. Co., Ltd. Apparatus for generating the complement of a floating point binary number. 4,269,101, Cl. 84-1.010.

Deutsche Forschungs-und-Versuchsanstalt fur Luft-und Raumfahrt e.V.: *See*—
Liebing, Lotar, 4,270,048, Cl. 250-216.000.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See*—
Hentschel, Klaus; Bittner, Friedrich; and Schreyer, Gerd, 4,269,979, Cl. 544-190.000.

Devanney, Raymond H., to Veeder Industries Inc. Extended range variator conversion mechanism. 4,269,078, Cl. 74-348.000.

DeVault, Albert N.: *See*—
Bonazza, Benedict R.; and DeVault, Albert N., 4,269,606, Cl. 44-63.000.

DeVos, Marc F.; and Gouw, Hoan G. Slide-puzzle. 4,269,414, Cl. 273-153.00S.

de Vries, Louis, to Chevron Research Company. Hydrocarbylethyl sulfonyl fluoride. 4,269,790, Cl. 260-543.00F.

DeWitt, Robert E. Water sprinkler. 4,269,354, Cl. 239-97.000.

Diehl, Lothar: *See*—
Brunold, Andreas; Kroetzsch, Peter; and Diehl, Lothar, 4,269,609, Cl. 55-71.000.

Diermann, Joachim P.; and Ritchey, Thomas W., Jr., to Ampex Corporation. Video frame storage recording and reproducing apparatus. 4,270,150, Cl. 360-10.000.

Diesel Kiki Co., Ltd.: *See*—
Hatsuno, Hiroshi; Machida, Toshio; Fukushima, Mitsuo; and Ogawa, Shinji, 4,269,061, Cl. 73-40.000.
Shibuya, Tsunenori, 4,269,576, Cl. 418-97.000.

Diffracto Ltd.: *See*—
Pryor, Timothy R.; Alway, David M.; and Hageniers, Omer L., 4,269,874, Cl. 427-282.000.

DiGiulio, Mario. Drill bushing for use in a metal tooling plate. 4,269,550, Cl. 408-241.00B.

Dillon, James E.: *See*—
Bailey, Charles H.; DePalma, Ted V.; and Dillon, James E., 4,269,807, Cl. 422-179.000.

Dillon, Richard S. Promoting circulation of blood. 4,269,175, Cl. 128-24.00R.

DiMatteo, Paul L.; Ross, Joseph A.; and Stern, Howard K., to Solid Photography Inc. Arrangement for sensing the surface of an object independent of the reflectance characteristics of the surface. 4,269,513, Cl. 356-376.000.

Dinella, Donald; Haller, Albert H.; and Polakowski, Theodore D., Jr., to Western Electric Company, Inc. Apparatus for distributing liquid over a surface. 4,269,138, Cl. 118-115.000.

Disharoon, Dale R., to Disharoon, Dale R. Method of microtomy utilizing vitreous carbon blade. 4,269,092, Cl. 83-42.000.

Dixon International Limited: *See*—
Redfarn, Cyril A., 4,269,944, Cl. 521-100.000.

Dobberpuhl, Dale R., to Deere & Company. Combined safety lever and ignition interlock switch. 4,270,032, Cl. 200-61.850.

Dobson, John V., to National Research Development Corporation. Electrochemical measuring system. 4,269,683, Cl. 204-195.00W.

Dochterman, Richard W., to General Electric Company. Motor having adapted shaft and shaft adapter. 4,270,063, Cl. 310-66.000.

Doiron, Donald: *See*—
Doiron, Joseph G., 4,268,962, Cl. 30-261.000.

Doiron, Joseph G., to Doiron, Donald. Finger held scissors. 4,268,962, Cl. 30-261.000.

Domenis, Danilo: *See*—
Moiso, Ugo; Massabo, Vincenzo; and Domenis, Danilo, 4,269,769, Cl. 260-176.000.

Domes, E. A.: *See*—
Venere, Lawrence A.; and Domes, E. A., 4,269,002, Cl. 51-281.0SF.

Donzis, Henry M.: *See*—
Tompkins, E. Neal; and Donzis, Henry M., 4,270,131, Cl. 346-108.000.

Doppelfeld, Ille-Stephanie: *See*—
Uhlendorf, Joachim; Betzing, Hans; Gabbar, Hamied; Graf, Erich; and Doppelfeld, Ille-Stephanie, 4,269,855, Cl. 424-285.000.

Dopper, Franz-Herbert: *See*—
Hock, Franz; Dopper, Franz-Herbert; and Stock, Gert, 4,269,701, Cl. 209-23.000.

Dorn, Silvia; Pfiffner, Albert; and Zurfluh, Rene, to Hoffmann-La Roche Inc. 1,4-Bis-[(2-propynyloxy)-methyl] cyclohexane. 4,270,009, Cl. 568-670.000.

Dotti, Giulio; Bertone, Antonino; and Roggero, Bruno, to Centro Ricerche Fiat S.p.A. Combined fluid logic control device. 4,269,224, Cl. 137-596.150.

Dottori, Roberto B., to Grinfa Sociedad de Responsabilidad Limitada. Device for the regulation of the position on the back of reclining seats. 4,269,447, Cl. 297-365.000.

Douren, Lars: *See*—
Broberg, Hans; Douren, Lars; and Troeng, John, 4,269,655, Cl. 159-13.00A.

Dove, Norman F. Steam distribution apparatus. 4,268,976, Cl. 34-155.000.

Dow Chemical Company, The: *See*—
Atchison, George J.; McEwen, Gerald K.; and Stevens, Violete L., 4,269,727, Cl. 252-188.30R.
Deborski, Gary A., 4,269,691, Cl. 204-290.00R.
Ezzell, Bobby R.; and Sorenson, Marius W., 4,269,675, Cl. 204-98.000.
Marriott, Robert C.; Kristal, Frank W.; and Julier, Robert M., 4,269,749, Cl. 260-29.6MQ.
Shipley, Randall S., 4,269,733, Cl. 252-429.00C.
Thomas, Lowell S., 4,269,762, Cl. 260-45.70P.
Vanderhider, James A.; and Lancaster, Gerald M., 4,269,945, Cl. 521-159.000.

Dow Corning Corporation: *See*—
Homan, Gary R., 4,269,741, Cl. 260-18.00S.
Homan, Gary R.; and Lee, Chi-Long, 4,269,963, Cl. 528-17.000.
Homan, Gary R.; and Toporcer, Louis H., 4,269,991, Cl. 556-427.000.

Dowd, Norton W. Power plant. 4,270,054, Cl. 290-4.00R.

Doyle, Gerald, to Exxon Research & Engineering Company. Process for converting CO and H_2O into hydrocarbons using water-soluble ruthenium catalysts. 4,269,784, Cl. 518-715.000.

Drazy, James W., to Caterpillar Tractor Co. Arbor assembly. 4,269,553, Cl. 409-232.000.

Drellishak, Glen J., to Bendix Corporation, The. Air/fuel ratio management system with calibration correction for manifold pressure differentials. 4,269,156, Cl. 123-478.000.

Dresser Industries, Inc.: *See*—
Phillips, Victor Q.; Griffin, Phil H.; and Sharki, Martin J., 4,269,567, Cl. 415-168.000.

Drewett, Robert J., to National Research Development Corporation. Radio antennae. 4,270,128, Cl. 343-702.000.

Drexler, Jerome; and Bouldin, Eric W., to Drexler Technology Corporation. Data storage medium having reflective particulate silver layer. 4,269,917, Cl. 430-16.000.

Drexler Technology Corporation: *See*—
Drexler, Jerome; and Bouldin, Eric W., 4,269,917, Cl. 430-16.000.

Dreyfus, Russell W.: *See*—
Tynan, Eugene E.; Dreyfus, Russell W.; and von Gutfeld, Robert J., 4,269,067, Cl. 73-643.000.

Dubenitz, Michael G.: *See*—
Lang, Edward J.; and Dubenitz, Michael G., 4,269,754, Cl. 260-33.60R.

DuBois, Donald D., to PPG Industries, Inc. Solid polymer electrolyte bipolar electrolyzer. 4,269,688, Cl. 204-254.000.

Dubuisson, George: *See*—
Schneider, Yves; and Dubuisson, George, 4,269,281, Cl. 180-70.00R.

Duckworth, James J.; and Glennon, William J., to Singer Company, The. Brushless DC motor control utilizing a ROM. 4,270,074, Cl. 318-254.000.

Dukes, Bobby W., to N-S-W Corporation. Wrench tools for castellated nuts. 4,269,088, Cl. 81-57.390.

Dulat, Joseph: *See*—
Bechgaard, Carl C.; and Dulat, Joseph, 4,269,875, Cl. 427-291.000.

Duncan, Damon H., to Sperry Corporation. Flexure assembly for a dynamically tuned gyroscope. 4,269,072, Cl. 74-5.00F.

Dundon, Michael J.: *See*—
Brewer, Donaldee; and Dundon, Michael J., 4,269,643, Cl. 156-96.000.

Dunlop Limited: *See*—
Harrington, Wilfred H.; and Jackson, William L., 4,269,251, Cl. 152-362.00R.

Dunnrowicz, Clarence J.: *See*—
Parker, Thomas E.; and Dunnrowicz, Clarence J., 4,270,105, Cl. 333-155.000.

Dunwald, Willi: *See*—
Lewalter, Jurgen; Rottmaier, Ludwig; Merten, Rudolf; Zecher, Wilfried; Dunwald, Willi; and Schulte, Bernhard, 4,269,750, Cl. 260-30.200.

Du Pont de Nemours, E. I., and Company: *See*—
Baker, William B., 4,269,059, Cl. 73-28.000.
Irwin, Robert S., 4,269,965, Cl. 528-128.000.
Kring, Elbert V., 4,269,804, Cl. 422-86.000.
Pazos, Jose F., 4,269,933, Cl. 430-291.000.
Williams, John F., 4,269,042, Cl. 62-513.000.

Dupre, Georges, to Baumgartner Papier S.A. Pen and integral capillary store. 4,269,526, Cl. 401-198.000.

Dur, Bernhard: *See*—
Tinnes, Bernhard; Baumann, Rainer; and Dur, Bernhard, 4,269,399, Cl. 266-236.000.

Duracell International Inc.: *See*—
Graham, Teresita O.; and Goodman, John T., 4,269,910, Cl. 429-190.000.

Duran, John; Missel, Leo; and Montelbano, Thomas O., to International Business Machines Corporation. Synthesis of polyamic acid. 4,269,968, Cl. 528-351.000.

Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., to Smith Kline & French Laboratories Limited. Alkoxypyridyl N-cyano or N-carbamoylguanidino alkanes, compositions containing same and uses thereof. 4,269,844, Cl. 424-263.000.

Duratex S.A.: *See*—
Moura, Joao B., 4,269,679, Cl. 204-129.650.

Durham, Samuel; and Johnston, Max M., to Polyvend, Inc. Can vending apparatus. 4,269,325, Cl. 221-194.000.

Dutcher, Daniel P., to Champion International Corporation. Round ice cream carton. 4,269,346, Cl. 229-21.000.

Dutton, Walter L., to A. W. Chesterton Company. Seal gland. 4,269,417, Cl. 277-11.000.

Dybvig, Helge. Fittings for releasably interconnecting a fuel tank with an internal combustion engine. 4,269,219, Cl. 137-322.000.

Dynamit Nobel Aktiengesellschaft: *See*—
Brede, Uwe; Penner, Horst; and Zeiher, Erich, 4,269,120, Cl. 102-202.000.
Schoengen, Anton; and Schroeder, Heinrich, 4,269,805, Cl. 422-106.000.

Dzhemilev, Usein M.: *See*—
Tolstikov, Genrikh A.; Dzhemilev, Usein M.; Rutman, Grigory I.; Michurov, Jury I.; Pantukh, Boris I.; Shavanov, Stanislav S.; Rafikov, Sagid R.; Egoricheva, Sofia A.; Juriev, Valery P.; Liakumovich, Alexandr G.; Sobolev, Valerian M.; Korotkevich, Boris S.; Shmuk, Jury A.; and Mandelshtamm, Elena Y., 4,270,016, Cl. 585-366.000.

E. R. Squibb & Sons, Inc.: *See*—
Denzel, Theodor; and Hoehn, Hans, 4,269,836, Cl. 424-246.000.

E. T. Oakes Limited: *See*—
Shaw, Douglas W.; and Gamwell, Richard, 4,269,437, Cl. 285-109.000.

Easom Engineering & Manufacturing, Corp.: *See*—
Obra, Bart, 4,269,076, Cl. 74-52.000.

Easterwood, John R. Wrecker-hoist attachment for truck bed. 4,269,396, Cl. 254-325.000.

Eastman Kodak Company: *See*—
Atwell, Robert E., 4,269,927, Cl. 430-217.000.
Bacon, Robert E.; Raleigh, Ronald G.; and Rosenfeld, Robert B., 4,269,914, Cl. 430-3.000.
Cheng, Dah-Chieh O.; and Chamberlin, Kim S., 4,269,985, Cl. 548-191.000.
Frank, David S., 4,269,938, Cl. 435-7.000.
Houle, Conrad G.; Howe, Dennis G.; Thomas, Harold T.; Wrobel, Joseph J.; and Fike, Bruce G., deceased, 4,270,130, Cl. 346-77.00E.
Jessop, Thomas C., 4,269,803, Cl. 422-63.000.
Nothnagle, Ronald J., 4,269,929, Cl. 430-264.000.
Zannucci, Joseph S., 4,269,629, Cl. 106-176.000.

Eaton Corporation: *See*—
Beck, Mark E., 4,269,350, Cl. 236-34.500.
Vandervoort, John R., 4,269,077, Cl. 74-331.000.
Winkler, Peter S., 4,269,289, Cl. 188-71.600.

Eaton, Homer L., to Eaton-Leonard Corporation. Bending method. 4,269,054, Cl. 72-151.000.

Eaton-Leonard Corporation: *See*—
Eaton, Homer L., 4,269,054, Cl. 72-151.000.

Ebata, Yoshihiro; Toibana, Yasuo; Uetsuki, Tsuneo; Kose, Saburo; and Kinoshita, Makoto, to Agency of Industrial Science and Technology; and Ministry of International Trade and Industry. Method for adhesion of ceramics. 4,269,641, Cl. 156-89.000.

Eckerle, Joseph S., to SRI International. Noninvasive blood pressure monitoring transducer. 4,269,193, Cl. 128-672.000.

Eckstien, Zvi: *See*—
Cohen, Yitzhak; Brandman, Yigal; and Eckstien, Zvi, 4,270,185, Cl. 364-900.000.

Ecodyne Corp.: *See*—
Butterworth, Donald J.; Halbfoster, Christopher; and Loudon, Robert, 4,269,707, Cl. 210-777.000.

Edelman, Robert, to Celanese Corporation. 3,3'-Tetraglycidylsulfonyldianiline thermosetting compositions and polybutadiene rubber modified thermosetting compositions prepared from the same. 4,269,759, Cl. 260-42.170.

Edo Corporation: *See*—
Miko, Richard J.; and Shapiro, Daniel H., 4,269,613, Cl. 55-278.000.

Edwards Oil Service, Inc.: *See*—
Kreger, James G., 4,269,698, Cl. 208-180.000.

Edwards, William M.; and Huang, C. Peter, to Pullman Incorporated. Horizontal cross-flow scrubber for sulfur oxide removal. 4,269,812, Cl. 423-242.000.

Egoricheva, Sofia A.: *See*—
Tolstikov, Genrikh A.; Dzhemilev, Usein M.; Rutman, Grigory I.; Michurov, Jury I.; Pantukh, Boris I.; Shavanov, Stanislav S.; Rafikov, Sagid R.; Egoricheva, Sofia A.; Juriev, Valery P.; Liakumovich, Alexandr G.; Sobolev, Valerian M.; Korotkevich, Boris S.; Shmuk, Jury A.; and Mandelshtamm, Elena Y., 4,270,016, Cl. 585-366.000.

Eichstadt, Arvin B. Tow bar for aircraft. 4,269,429, Cl. 280-503.000.

Eie, Nils. Ski boot heel attachment. 4,269,430, Cl. 280-614.000.

Eisenberg, Arnold J., to Owens-Corning Fiberglas Corporation. Method for finishing a plate. 4,268,946, Cl. 29-424.000.

Ejima, Shozo; Tomioka, Susumu; Matsumoto, Tadao; and Hane, Naruaki, to Chisso Corporation. Heat-adhesive composite fibers and process for producing same. 4,269,888, Cl. 428-296.000.

Ejiri, Yoshihiro: *See*—
Sato, Masanori; Wakabayashi, Hiroharu; Ejiri, Yoshihiro; and Yamamoto, Hitoshi, 4,270,029, Cl. 179-175.31R.

Eklund, Hans G. U.: *See*—
Fornell, Erik G.; and Eklund, Hans G. U., 4,269,245, Cl. 144-245.00A.

Ekman Engineering AG: *See*—
Ekman, Kjell R., 4,269,389, Cl. 251-149.600.

Ekman, Kjell R., to Ekman Engineering AG. Coupling device. 4,269,389, Cl. 251-149.600.

Elbel, Charles R.: *See*—
Rayburn, Robert L.; Watson, Robert L.; Elbel, Charles R.; and Schweickardt, Karl W., 4,269,194, Cl. 128-719.000.

Elder, John G.: *See*—
Moriconi, Dario J.; and Elder, John G., 4,269,364, Cl. 241-36.000.

Electric Power Research Institute: *See*—
King, Randall N.; and Mitoff, Stephan P., 4,269,909, Cl. 429-104.000.

Electron Machine Corporation: *See*—
Vossberg, Carl A., 4,269,514, Cl. 356-386.000.

Elfab Corporation: *See*—
Ammon, J. Preston; Weaver, Harry R.; and Rodriquez, Claude, 4,269,468, Cl. 339-176.00M.

Elfert, Klaus; Wolf, Gerhard D.; and Rosenkranz, Hans J., to Bayer Aktiengesellschaft. Semipermeable membranes of aromatic disulfimide containing polyamides. 4,269,967, Cl. 528-337.000.

Ellinor, Daniel H. Resiliently stabilized web movement for honeycomb machine. 4,269,342, Cl. 226-60.000.

Elliott Brothers (London) Limited: *See*—
Ellis, Stafford M., 4,269,475, Cl. 350-174.000.

Elliott, Michael T.; Splinter, Michael R.; Jones, Addison B.; and Reekstin, John P., to Rockwell International Corporation. Submicron semiconductor devices. 4,268,951, Cl. 29-571.000.

Ellis, Stafford M., to Elliott Brothers (London) Limited. Head-up displays. 4,269,475, Cl. 350-174.000.

Ellison, Howard W.: *See*—
Price, William; and Ellison, Howard W., 4,268,924, Cl. 4-373.000.

Eltra Corporation: *See*—
Major, Jeffrey T., 4,270,065, Cl. 310-207.000.

Elwell, John M., Jr., to Charles Stark Draper Laboratory, Inc., The. Optical reference gyro. 4,270,044, Cl. 250-201.000.

Embree, John M. Closed pressurized solar heating system with automatic valveless solar collector drain-back. 4,269,167, Cl. 126-420.000.

Emerson Electric Co.: *See*—
Hansen, John M., 4,268,998, Cl. 51-148.000.
Kwater, James L., 4,269,372, Cl. 242-129.800.

Emery, Roy W. Nestable moulded container. 4,269,345, Cl. 229-2.50R.

EMI Limited: *See*—
Soby, William; and Johnston, Samuel J. B., 4,269,669, Cl. 204-5.000.

Emory, Jack L. Apparatus for reducing aerodynamic drag. 4,269,444, Cl. 296-1.00S.

Empire of Carolina, Inc.: *See*—
Almond, George, 4,269,291, Cl. 192-6.00R.
Langieri, Michael, 4,269,413, Cl. 273-121.00R.

Endoh, Kenjiro; Ishizawa, Yoshiyuki; Tanaka, Masanori; and Iwasaki, Koji, to Tokyo Shibaura Denki Kabushiki Kaisha. Digital amplitude control for digital audio signal. 4,270,177, Cl. 364-571.000.

Engbers, Hermann, to Wintershall Aktiengesellschaft. Resetting device for the cam head on a deep-well pump drive. 4,269,082, Cl. 74-522.000.

Engel, Kurt; and Scheurecker, Werner, to Voest-Alpine Aktiengesellschaft. Protection arrangement for preventing damage at a continuous casting plant for slabs. 4,269,260, Cl. 164-442.000.

Engelbrecht, Eckart; and Nieder, Elmar, to GMT Gesellschaft fur med. Technik mbH. Endoprosthesis for a knee joint. 4,268,920, Cl. 3-1.911.

Engelsmann, Dieter; and Schroder, Rolf, to AGFA-Gevaert, A.G. Photographic camera with single selector structure performing exposure-parameter adjustment and also switching of control and monitoring circuits. 4,269,492, Cl. 354-42.000.

English Card Clothing Company Limited, The: *See*—
Grimshaw, Keith, 4,268,937, Cl. 19-114.000.

Enomoto, Hiroshi: *See*—
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; and Tanaka, Haruo, 4,269,838, Cl. 424-250.000.

Entzmann, Karl, to Simmering-Graz-Pauker Aktiengesellschaft fur Maschinen-, Kessel- und Waggonbau. Method and apparatus for regenerating and reactivating cement. 4,269,363, Cl. 241-30.000.

Enviropak Inc.: *See*—
Walchli, John R., 4,268,938, Cl. 24-201.00C.

Erbach, Thomas W., to DEC International, Inc. Teat cup assembly. 4,269,143, Cl. 119-14.490.

Erhardt, Peter F.: *See*—
Lu, Chin H.; and Erhardt, Peter F., 4,269,922, Cl. 430-126.000.
Erickson, Gerald A.: *See*—
Ziegelbein, Paul J.; Dawson, Sylvan L.; and Erickson, Gerald A., 4,270,117, Cl. 340-168.00B.
Erickson, John W., to Kobe, Inc. Method of producing an erosion resistant surface. 4,269,872, Cl. 427-239.000.
Erwin, Phillip, to Abbott Laboratories. Apparatus and method for measuring the magnitude of polarization of light. 4,269,511, Cl. 356-368.000.
Escaron, Pierre C.; and Hoppe, Joachim A., to Schlumberger Technology Corporation. Downhole force measuring device. 4,269,063, Cl. 73-151.000.
Eshghy, Siavash, to Rockwell International Corporation. Tension control of fasteners. 4,268,944, Cl. 29-407.000.
Etablissemeats Francois Salomon et Fils: *See*—
Salomon, Georges P. J., 4,268,931, Cl. 12-146.00R.
Ethyl Corporation: *See*—
Bartleson, John D.; and Wollensak, John C., 4,269,720, Cl. 252-50.000.
Evans, Annette. Mastectomy bra. 4,269,191, Cl. 128-488.000.
Evrad, Gerald D.: *See*—
Benton, Charles M.; Arnold, Franklin D.; Forberg, Helge O.; Tuscher, Roger L.; and Evrad, Gerald D., 4,269,592, Cl. 432-19.000.
Exxon Production Research Company: *See*—
Hopke, Scott W., 4,269,539, Cl. 405-130.000.
Exxon Research & Engineering Company: *See*—
Baker, Richard H., 4,270,163, Cl. 363-43.000.
Doyle, Gerald, 4,269,784, Cl. 518-715.000.
Geiger, Joseph T., 4,268,977, Cl. 34-242.000.
Grenoble, Dane C.; Kim, Chang J.; and Murrell, Lawrence L., 4,269,737, Cl. 252-464.000.
Logie, James A.; Bryan, T. James; and Wilson, Arthur G., 4,270,147, Cl. 358-256.000.
Metrailer, William J., 4,269,696, Cl. 208-120.000.
Patel, Ramesh N.; Hou, Ching-Tsang; and Laskin, Allen I., 4,269,940, Cl. 435-148.000.
Wagensommer, Joseph; and Manalastas, Pacifico V., 4,269,955, Cl. 526-185.000.
Worley, Arthur C.; and Basile, Richard J., 4,269,166, Cl. 126-285.00R.
Ezzell, Bobby R.; and Sorenson, Marius W., to Dow Chemical Company, The. Electrolyte series flow in electrolytic chlor-alkali cells. 4,269,675, Cl. 204-98.000.
Falk, Terrence F.; Schultz, Terrence R.; and Hoffmann, James E., to Motorola, Inc. Sequential channel selector system. 4,270,213, Cl. 455-77.000.
Far-Mar-Co., Inc.: *See*—
Rao, Ganta V.; and Shoup, Floyd K., 4,269,766, Cl. 260-112.00G.
Faranetta, John G.; and Feller, Robert G., to Okonite Company, The. Method of manufacturing a sealed cable employing a wrapped foam barrier. 4,269,638, Cl. 156-53.000.
Farge, Daniel; Jossin, Alain; Ponsinet, Gerard; and Reisdorf, Daniel, to Rhone-Poulenc Industries. Method for treating rhinoviral complaints. 4,269,842, Cl. 424-258.000.
Farina, Attilio, to Indesit Industria Elettrodomestici Italiana S.p.A. Television set which displays analog data relevant to the operation of the television set on its video display. 4,270,145, Cl. 358-188.000.
Farmer, Gary W. Motor vehicle with convertible bodies. 4,269,443, Cl. 296-1.00S.
Farmitalia Carlo Erba: *See*—
Lombardi, Paolo; Franceschi, Giovanni; and Arcamone, Federico, 4,269,771, Cl. 260-245.20R.
Farrior, James S., to Lockheed Missiles & Space Company, Inc. Endless traction band support apparatus. 4,269,457, Cl. 305-11.000.
Faul, Wolfgang; Kastening, Bertel; and Luft, Harald, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Method for regenerating a cupric chloride and/or ferric chloride containing etching solution in an electrolysis cell. 4,269,678, Cl. 204-129.600.
Faulkner, Bobby P.; Heyer, Wayne D.; and Weinecke, Michael H., to Allis-Chalmers Corporation. Roller grate material bed conveying and heat exchange apparatus providing plural bed depths. 4,269,593, Cl. 432-58.000.
Federal Paper Board Company, Inc.: *See*—
Growney, Lawrence J., 4,269,316, Cl. 206-499.000.
Fein, Marvin M.: *See*—
Gaylord, Norman G.; Nagler, Meshulam; and Fein, Marvin M., 4,269,957, Cl. 526-192.000.
Feith, Donald, to United States Machine Works, Inc. System and apparatus for program controlled delivery of game balls. 4,269,163, Cl. 124-77.000.
Feldman, Norman: *See*—
Uyeda, Stanley T.; Radu, E. John; Talbot, William J., Jr.; and Feldman, Norman, 4,269,540, Cl. 405-168.000.
Feldtkeller, Ernst, to Siemens Aktiengesellschaft. Electro-optical voltage measurement device. 4,269,483, Cl. 350-390.000.
Felix, Raymond A., to Stauffer Chemical Company. Biocidal mercaptothiadiazole Haloacrylylnitrile compounds. 4,269,984, Cl. 548-142.000.
Felix, Raymond A., to Stauffer Chemical Company. Biocidal mercaptotriazole haloacrylylnitrile compounds. 4,269,988, Cl. 548-263.000.
Feller, Robert G.: *See*—
Faranetta, John G.; and Feller, Robert G., 4,269,638, Cl. 156-53.000.
Feniger, Arnold R. Eyeglass case. 4,269,306, Cl. 206-5.000.
FEPS International, Ltd.: *See*—
Shima, Eiji; Shimizu, Masao; and Den, Hiroshi, 4,269,380, Cl. 248-74.00R.
Ferguson, Douglas J.: *See*—
Kowalski, Ben C.; Kowalski, Daniel J.; and Ferguson, Douglas J., 4,269,340, Cl. 224-326.900.
Ferlan, Stephen J.: *See*—
Kmonk, Stanley; Cadwell, Dennis J.; and Ferlan, Stephen J., 4,269,661, Cl. 176-50.000.
Ferrari, Richard A.; and Beyler, Arthur L., to Sterling Drug Inc. Topical dermatological method of use of an androstenopyrazole. 4,269,831, Cl. 424-241.000.
Fiat-Allis Construction Machinery, Inc.: *See*—
Shears, W. Allan, 4,269,433, Cl. 280-716.000.
Fiat Auto S.p.A.: *See*—
Cavallino, Francesco; Martinez, Pasquale; Allione, Michele; and Schiavuzzi, Roberto, 4,269,029, Cl. 60-293.000.
Fiber Associates, Inc.: *See*—
Geyer, Charles J., Jr.; and White, Ben E., 4,269,973, Cl. 536-101.000.
Fichtel & Sachs AG: *See*—
Gelhard, Egon, 4,269,440, Cl. 292-336.300.
Fife Corporation: *See*—
Burns, James W.; and Shelton, John J., 4,269,140, Cl. 118-665.000.
Figini, Alessandro, to SAES Getters S.p.A. Method for the production of non-evaporable ternary gettering alloys. 4,269,624, Cl. 75-177.000.
Fike, Bruce G., deceased: *See*—
Houle, Conrad G.; Howe, Dennis G.; Thomas, Harold T.; Wrobel, Joseph J.; and Fike, Bruce G., deceased, 4,270,130, Cl. 346-77.00E.
Fike, Joyce A., executrix: *See*—
Houle, Conrad G.; Howe, Dennis G.; Thomas, Harold T.; Wrobel, Joseph J.; and Fike, Bruce G., deceased, 4,270,130, Cl. 346-77.00E.
Filos S.a.s. Di Zancaner Alberto & Sorella: *See*—
Zancaner, Alberto, 4,269,488, Cl. 351-113.000.
Filtrol Corporation: *See*—
Lim, John; Huang, Warren; and Brady, Michael, 4,269,815, Cl. 423-328.000.
Finney, William C. Retaining wall structure and method of constructing same. 4,269,545, Cl. 405-285.000.
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Saarem, Myrl J.; Lovelace, Donald E.; Firebaugh, Dale C.; and Soukup, Dale F., 4,269,229, Cl. 137-869.000.
Firth, Francis G., to Applied Plastics Co., Inc. Kneadable mastic composition comprised of epoxy resin and aromatic diamine curing agent. 4,269,751, Cl. 260-31.20R.
Fischer, Artur. Coupling arrangement for transmitting torque. 4,269,080, Cl. 74-425.000.
Fischer, Christopher L. Ultrasonic sensing apparatus. 4,269,066, Cl. 73-639.000.
Fischer, Rudolf; and Hartmann, Karl-Heinz, to Albert-Frankenthal AG, Firma. Folding apparatus. 4,269,402, Cl. 493-437.000.
Fisons Limited: *See*—
Orr, Thomas S. C.; and Keogh, Raymond W., 4,269,853, Cl. 424-283.000.
Smith, Dennis A., 4,269,854, Cl. 424-283.000.
Fitzke, Emil V.; Wenner, Donald B.; and Polak, Michael J., to RCA Corporation. Temperature insensitive filter for kinescope envelopes. 4,269,616, Cl. 55-493.000.
Fitzky, Hans G.; Soder, Jorg M.; Schmitt, Franz; Bollongino, Norbert; and Rehrmann, Helmut, to Bayer Aktiengesellschaft. Microwave moisture measuring instrument with switchable measuring regions. 4,270,083, Cl. 324-58.50C.
Fivizzani, Mary A.: *See*—
De Luca, Hector F.; Schnoes, Heinrich K.; Napoli, Joseph L.; and Fivizzani, Mary A., 4,269,777, Cl. 260-397.100.
Flamm, Peter M.; and Miskin, Leslie, to ITT Industries, Inc. Color television receiver comprising at least one integrated circuit for the luminance signal and the chrominance signals. 4,270,139, Cl. 358-23.000.
Flanagan, James P.; and Carter, Jack L. Separator valve. 4,269,217, Cl. 137-183.000.
Flanagan, Joseph E., to Rockwell International Corporation. High-performance MHD solid gas generator. 4,269,637, Cl. 149-19.100.
Flannery, William E., to Sperry Corporation. Multiple generator block replicate bubble memory device. 4,270,186, Cl. 365-15.000.
Fleissner, Hans, to Vepa Aktiengesellschaft. Process for the continuous shrinking of yarns. 4,268,941, Cl. 28-281.000.
Flora, Arlen E.: *See*—
Crist, Gerald L.; and Flora, Arlen E., 4,269,075, Cl. 74-16.000.
Flora, Lawrence; and Francis, Marion D., to Procter & Gamble Company, The. Indole anti-inflammatory composition. 4,269,828, Cl. 424-204.000.
Flothmann, Detlev; Ruell, Hartwig; and Staimer, Angelika, to Siemens Aktiengesellschaft. Identification card with a hologram and a process for the production thereof. 4,269,473, Cl. 350-3.610.
Flotow, Richard A.; and Sink, William H. Two-stage coaxial spring damper. 4,269,296, Cl. 192-106.200.
FMC Corporation: *See*—
Berkowitz, Sidney, 4,269,786, Cl. 260-458.00R.
Haley, Frank P., 4,269,239, Cl. 141-387.000.
Woods, Quentin T.; Becker, Paul H.; and Gerverdinck, William D., 4,269,015, Cl. 53-526.000.
Focke & Co.: *See*—
Focke, Heinz H., 4,269,559, Cl. 414-414.000.

Focke, Heinz H., to Focke & Co. Apparatus for discharging containers (trays) filled with cigarettes and the like. 4,269,559, Cl. 414-414.000.
Fogg Filler Company: *See—*
Fogg, Michael T., 4,269,236, Cl. 141-293.000.
Fogg, Michael T., to Fogg Filler Company. Container filling device. 4,269,236, Cl. 141-293.000.
Fogle, Peter H. Portable band saw. 4,269,098, Cl. 83-733.000.
Fonderie et Ateliers des Sablons: *See—*
Lacombe, Pierre, 4,270,175, Cl. 364-562.000.
Forberg, Helge O.: *See—*
Benton, Charles M.; Arnold, Franklin D.; Forberg, Helge O.; Tuscher, Roger L.; and Evrad, Gerald D., 4,269,592, Cl. 432-19.000.
Ford Motor Company: *See—*
Allen, Denis L. C., 4,268,996, Cl. 49-212.000.
Knapp, Charles A.; and Rao, V. Durga N., 4,269,262, Cl. 165-8.000.
Rao, V. Durga N., 4,269,570, Cl. 417-64.000.
Tabar, Ronald J.; and Killgoar, Paul C., Jr., 4,269,746, Cl. 260-23.70H.
Fornell, Erik G.; and Eklund, Hans G. U., to Kockums Industri Aktiebolag. Infeed mechanism. 4,269,245, Cl. 144-245.00A.
Forsythe, Calvin C.; Strelow, John L.; and Clift, Miner E., to BS & B Safety Systems, Inc. Safety pressure relief device. 4,269,214, Cl. 137-68.00R.
Fory, Werner: *See—*
Szczepanski, Henry; Martin, Henry; Fory, Werner; and Pissiotas, Georg, 4,269,775, Cl. 260-340.700.
Foster, Karl; and Shilling, Jack W., to Westinghouse Electric Corp. Loss reduction in oriented iron-base alloys containing sulfur. 4,269,634, Cl. 148-120.000.
Foulkes, David M.: *See—*
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Four Star Corporation: *See—*
Kowalski, Ben C.; Kowalski, Daniel J.; and Ferguson, Douglas J., 4,269,340, Cl. 224-326.000.
Franceschi, Giovanni: *See—*
Lombardi, Paolo; Franceschi, Giovanni; and Arcamone, Federico, 4,269,771, Cl. 260-245.20R.
Francis, Marion D.: *See—*
Flora, Lawrence; and Francis, Marion D., 4,269,828, Cl. 424-204.000.
Frank, David S., to Eastman Kodak Company. Assay of peroxidatively active materials. 4,269,938, Cl. 435-7.000.
Frankel, Robert S. Two-piece quadripod for cameras. 4,269,499, Cl. 354-293.000.
Franklyn, Derek A. Line marking machine with heaters. 4,269,328, Cl. 222-146.00H.
Franks, Lawrence A., to Burr Oak Tool & Gauge Company. Device for discharging stacked fins from a transporter. 4,269,555, Cl. 414-27.000.
Franse, Albert D.: *See—*
Watson, Frederick D.; Mayse, Weldon D.; and Franse, Albert D., 4,269,681, Cl. 204-188.000.
Fredell, Soren; and Jarl, Stig, to AB Volvo. Arrangement for preventing incorrect shifting in a vehicle gearbox. 4,269,079, Cl. 74-365.000.
Freeman Chemical Corporation: *See—*
Neumann, Dennis J., 4,269,745, Cl. 260-23.00P.
Freeman, Ernest A., Jr.: *See—*
Worth, Daniel L.; and Freeman, Ernest A., Jr., 4,269,602, Cl. 8-116.400.
Freiede & Goldman, Ltd.: *See—*
Goldman, Jerome L.; Breeden, John O. 'R.; and Michel, Walter H., 4,269,543, Cl. 405-198.000.
Freitag, Dieter; Nouvertne, Werner; Burkhardt, Claus; and Kleiner, Frank, to Bayer Aktiengesellschaft. Polycarbonates with alkylphenyl end groups, their preparation and their use. 4,269,964, Cl. 528-126.000.
Friday, Philip L., to Friday Tractor Co., Inc. Fruit and nut harvesting apparatus. 4,269,021, Cl. 56-329.000.
Friday Tractor Co., Inc.: *See—*
Friday, Philip L., 4,269,021, Cl. 56-329.000.
Froitzheim, Hermann, to Leybold-Heraeus GmbH. Electronic or ionic optical apparatus. 4,270,053, Cl. 250-508.000.
Frush, Donald R. Spoke wheel assembly. 4,269,452, Cl. 301-6.00R.
Fry, Warren C., to General Equipment & Mfg. Co., Inc. Electronic synchronization monitor. 4,270,156, Cl. 361-21.000.
Fryatt, Leslie A., to J. H. Fenner & Co. Limited. Powered conveyors. 4,269,305, Cl. 198-781.000.
Fryer, Rodney I.; and Gilman, Norman W., to Hoffmann-La Roche Inc. Thiazolo[5,4-d][2]benzazepines. 4,269,774, Cl. 260-245.500.
Fuji Photo Film Co., Ltd.: *See—*
Arai, Atsuaki; Oishi, Yasushi; Nakazyo, Kiyoshi; Sugizaki, Atsushi; and Okumura, Akio, 4,269,936, Cl. 430-389.000.
Asanuma, Yoshimasa; and Nishimura, Taiichi, 4,269,937, Cl. 430-538.000.
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,269,926, Cl. 430-216.000.
Kato, Hajime; Satomura, Masato; and Sato, Kozo, 4,269,893, Cl. 428-341.000.
Minagawa, Nobuhiko, 4,269,891, Cl. 428-335.000.
Fujihira, Masamichi: *See—*
Osa, Tetsuo; Fujihira, Masamichi; Matsue, Tomokazu; and Yamauchi, Takashi, 4,269,674, Cl. 204-81.000.
Fujijura Cable Works, The: *See—*
Shima, Eiji; Shimizu, Masao; and Den, Hiroshi, 4,269,380, Cl. 248-74.00R.
Fujishiro, Takeshi, to Nissan Motor Company, Limited. Fuel injection system. 4,269,157, Cl. 123-478.000.
Fujita, Yoshiji; Ohnishi, Takashi; and Nishida, Takashi, to Kuraray Co., Ltd. Hydroquinone derivatives and preparation thereof. 4,270,003, Cl. 568-33.000.
Fujitsu Limited: *See—*
Tanakura, Yoshiyuki; and Uchida, Keiichiro, 4,270,181, Cl. 364-736.000.
Toyokura, Nobuo; Tokunaga, Hiroshi; Inoue, Shinichi; Ishikawa, Hajime; and Shinoda, Masaichi, 4,270,136, Cl. 357-23.000.
Fukano, Takashi: *See—*
Ito, Nobuyoshi; Morishita, Hiroshi; Morita, Minoru; and Fukano, Takashi, 4,269,323, Cl. 220-423.000.
Fukuoka, Masayuki; Arakawa, Tatsumi; Kimura, Muneaki; Masukawa, Yukihisa; and Kobayashi, Hidehiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Aluminum-halogen cells. 4,269,911, Cl. 429-199.000.
Fukuroi, Takeo, to Yoshida Kogyo K.K. Slider for a large sized slide fastener. 4,268,939, Cl. 24-205.15R.
Fukushima, Mitsuo: *See—*
Hatsuno, Hiroshi; Machida, Toshio; Fukushima, Mitsuo; and Ogawa, Shinji, 4,269,061, Cl. 73-40.000.
Furruse, Takao: *See—*
Hayashi, Izuo; and Furruse, Takao, 4,270,096, Cl. 331-94.50H.
Furukawa, Hajime, to Pioneer Electronic Corporation. CATV Converter. 4,270,212, Cl. 455-3.000.
Furukawa Metals Company, Ltd.: *See—*
Inoue, Sadao; Umemura, Tetsuya; Suzuki, Hiroshi; and Kuroyanagi, Takashi, 4,269,623, Cl. 75-157.500.
Fusion Systems Corporation: *See—*
Ury, Michael G.; and Ryan, Patrick J., 4,269,581, Cl. 425-174.400.
Futaba Denshi Kogyo K.K.: *See—*
Kishino, Takao; Kawasaki, Kishio; and Yamaguchi, Nobuo, 4,270,068, Cl. 313-497.000.
Fuyama, Moriaki; Honda, Haruhiko; and Ura, Mitsuru, to Hitachi Metals, Ltd. Surface hafnium-titanium carbide coated hard alloy and method. 4,269,899, Cl. 428-457.000.
Gabbar, Hamied: *See—*
Uhlendorf, Joachim; Betzing, Hans; Gabbar, Hamied; Graf, Erich; and Doppelfeld, Ille-Stephanie, 4,269,855, Cl. 424-285.000.
Gabler, Gerhard, to Precisa AG Rechenmaschinenfabrik. Cartridge for dye-impregnated endless ribbon. 4,269,520, Cl. 400-196.000.
Gabriel, John F.: *See—*
Schall, Wayne E.; Miller, John E.; and Gabriel, John F., 4,268,975, Cl. 34-105.000.
Gaensslen, Fritz H.; and Spiller, Eberhard A., to International Business Machines Corporation. Method for fabricating self-aligned high resolution non planar devices employing low resolution registration. 4,268,952, Cl. 29-571.000.
GAF Corporation: *See—*
Bondoc, Alfredo A., 4,269,886, Cl. 428-219.000.
Gager, Lawrence J., Jr. Windshield mounting assembly. 4,269,445, Cl. 296-78.100.
Gageur, Fritz: *See—*
Strahm, Christian; and Gageur, Fritz, 4,269,046, Cl. 68-13.00R.
Gagnon, Jacques: *See—*
LaRose, Claude; and Gagnon, Jacques, 4,269,335, Cl. 224-31.000.
Galkin, Jury M.; Saulin, Albert B.; and Olshvang, Jury N. Device for gauging thickness of refractory lining. 4,270,051, Cl. 250-358.00R.
Gallagher, Gerard A.: *See—*
Wyman, Kenneth R.; and Gallagher, Gerard A., 4,270,164, Cl. 363-56.000.
Galli, Mario: *See—*
Sisti, Giorgio; Trestianu, Sorin; and Galli, Mario, 4,269,608, Cl. 55-67.000.
Gamwell, Richard: *See—*
Shaw, Douglas W.; and Gamwell, Richard, 4,269,437, Cl. 285-109.000.
Ganellin, Charon R.: *See—*
Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., 4,269,844, Cl. 424-263.000.
Gans, Leo; Bruins, Paul F.; Shapiro, Jay B.; and Rothman, Myron, to Voplex Corp. Flexible impact resistant trim and method for manufacture thereof. 4,269,897, Cl. 428-419.000.
GAO Gesellschaft fur Automation und Organisation mbH: *See—*
Mitzel, Wilhelm, 4,269,405, Cl. 271-94.000.
Garner, John N., to Northern Telecom Limited. Apparatus for use in fluidized powder filling of multiple core unit cables. 4,269,023, Cl. 57-1.0UN.
Garrett Corporation, The: *See—*
Martin, William B., 4,269,293, Cl. 192-35.000.
Mattson, George B.; and Woodhouse, Geoffrey D., 4,269,027, Cl. 60-39.040.
Garvey Corporation: *See—*
Garvey, Francis J., 4,269,302, Cl. 198-607.000.
Garvey, Francis J., to Garvey Corporation. Modular conveyor units and spiral conveyors constructed therefrom. 4,269,302, Cl. 198-607.000.
Garwood, William E.: *See—*
Brennan, James A.; Caesar, Philip D.; Ciric, Julius; Garwood, William E.; and Holland, Robert E., 4,269,783, Cl. 518-718.000.
Gattyan, Andor. Piston/cylinder type elements and compactors embodying those elements. 4,269,115, Cl. 100-98.00R.
Gauthier, Francois H.; and Lepeytre, Jean-Paul, to Thomson-CSF. Helmet-mounted display system. 4,269,476, Cl. 350-174.000.

Gawler, Glenn B.; and McFadyen, Robert J., to General Electric Company. Integrated circuit FM local oscillator with AFC control and temperature compensation. 4,270,102, Cl. 331-115.000.
Gaylord, N. Grant, to Dart Industries Inc. Peroxygen compound-stannous chloride redox catalyst system for suspension polymerization of vinyl chloride. 4,269,958, Cl. 526-192.000.
Gaylord, Norman G.; and Nagler, Meshulam, to Dart Industries Inc. Peroxygen compound-metal carboxylate redox catalyst system for vinyl chloride polymerization. 4,269,956, Cl. 526-192.000.
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Gaylord, Norman G., to Dart Industries Inc. Peroxygen compound-6-O-alkanoyl-L-ascorbic acid redox catalyst system for vinyl monomer polymerization. 4,269,960, Cl. 526-213.000.
Geberth, John D., Jr. Self-cleaning spray nozzle. 4,269,355, Cl. 239-107.000.
Gebr. Eickhoff Maschinenfabrik und Eisengeisserei m.b.H.: *See*—
Weber, Karl-Heinz, 4,270,072, Cl. 318-34.000.
Geiger, Joseph T., to Exxon Research & Engineering Company. Sealing apparatus for ovens. 4,268,977, Cl. 34-242.000.
Gelbard, Robert B., to General Electric Company. Defrost control. 4,269,035, Cl. 62-155.000.
Gelhard, Egon, to Fichtel & Sachs AG. Electrically energized operating mechanism for the door of a vehicle and the like, and drive arrangement for the mechanism. 4,269,440, Cl. 292-336.300.
Gendelman, Bernard: *See*—
Weintraub, Morton; Waxman, Elliot; and Gendelman, Bernard, 4,270,226, Cl. 455-353.000.
General Atomic Company: *See*—
Ohkawa, Tihiro, 4,269,658, Cl. 176-3.000.
General Dynamics Corporation: *See*—
Brand, Richard A., 4,269,953, Cl. 525-534.000.
General Electric Company: *See*—
Abolins, Visvaldis; and Lee, Gim F., Jr., 4,269,950, Cl. 525-68.000.
Bower, Arnold B., Jr., 4,269,704, Cl. 209-393.000.
Desmond, Richard J., 4,270,138, Cl. 357-81.000.
Dochterman, Richard W., 4,270,063, Cl. 310-66.000.
Gawler, Glenn B.; and McFadyen, Robert J., 4,270,102, Cl. 331-115.000.
Gelbard, Robert B., 4,269,035, Cl. 62-155.000.
Holub, Fred F.; and Macke, Gerald F., 4,269,755, Cl. 260-37.0PC.
Hughes, William C., 4,270,206, Cl. 375-9.000.
Morris, Edwin E., 4,270,143, Cl. 358-125.000.
Walker, Loren H.; and Cutler, John H., 4,270,078, Cl. 318-803.000.
Zamek, Otto S.; Pauze, Denis R.; and Jablonski, Richard J., 4,269,752, Cl. 260-31.40R.
Zaveri, Pradhumankumar S., 4,270,082, Cl. 323-248.000.
General Equipment & Mfg. Co., Inc.: *See*—
Fry, Warren C., 4,270,156, Cl. 361-21.000.
General Motors Corporation: *See*—
Clingman, David L.; Cavanagh, John R.; Schechter, Berton; and Cross, Kenneth R., 4,269,903, Cl. 428-591.000.
Meginnis, George B.; and Spees, John A., 4,269,032, Cl. 60-754.000.
Wandel, David M., 4,269,083, Cl. 74-579.00E.
Wright, Dolph D., 4,269,580, Cl. 425-150.000.
General Technology, Inc.: *See*—
Schwarz, Gail B.; and Hickinbotham, Lawrence F., 4,269,114, Cl. 100-53.000.
Genova, Inc.: *See*—
Pepper, Kenneth V., 4,269,230, Cl. 138-89.000.
Georg Fischer Aktiengesellschaft: *See*—
Wolfgang, Walter, 4,269,003, Cl. 51-421.000.
Georgini, Eugene A.: *See*—
Sullivan, John L.; Georgini, Eugene A.; and Simmonds, Milo R., 4,269,216, Cl. 137-102.000.
Geosource, Inc.: *See*—
Hogan, Alfred D., 4,268,932, Cl. 15-104.06A.
Gersbeck, Rolf; and Krohn, Manfred, to Hermann Berstorff Maschinenbau GmbH. Apparatus, including an endless belt, for continuously hot pressing a web of material. 4,269,585, Cl. 425-373.000.
Gersmann, Klaus; and Gruber, Oskar, to Bayerische Motoren Werke Aktiengesellschaft. Displaceable seat for automotive vehicles. 4,269,446, Cl. 297-341.000.
Gerteis, Hans, to Heinkel Industriezentrifugen GmbH & Co., Firma. Filter centrifuge. 4,269,711, Cl. 210-232.000.
Gerverdinck, William D.: *See*—
Woods, Quentin T.; Becker, Paul H.; and Gerverdinck, William D., 4,269,015, Cl. 53-526.000.
Geu, Edwin J.: *See*—
Jezuit, Arthur D.; and Geu, Edwin J., 4,268,973, Cl. 34-69.000.
Geyer, Charles J., Jr.; and White, Ben E., to Fiber Associates, Inc. Process and apparatus for making alkali cellulose in sheet form. 4,269,973, Cl. 536-101.000.
GF Business Equipment, Inc.: *See*—
Kenworthy, Max H.; and Textoris, Melvin A., 4,270,020, Cl. 174-48.000.
Gibbons, James F. Amorphous solar cells. 4,270,018, Cl. 136-258.000.
Gibbs, Alfred S. Conveyor belt scraper system. 4,269,301, Cl. 198-499.000.
Gibson, Alan F.: *See*—
Hogan, John C.; and Gibson, Alan F., 4,269,398, Cl. 266-230.000.
Gilardoni, Giovanni; and Gilardoni, Sergio, to Ravida, Antonino; and Ravida, Regina Carla Ezzevalli. System of protection against short circuits and fulminations. 4,270,158, Cl. 361-42.000.
Gilardoni, Sergio: *See*—
Gilardoni, Giovanni; and Gilardoni, Sergio, 4,270,158, Cl. 361-42.000.
Gilbard, Jeffrey P. Method of measuring tear osmolarity and apparatus therefor. 4,269,197, Cl. 128-763.000.
Gilbert, Everett E., to United States of America, Army. Preparation of HNS from HNBB using oxygen. 4,270,012, Cl. 568-931.000.
Gilbert, John R. B.; and Baldwin, Peter H., to IMI Kynoch Limited. Electrode suspension bars. 4,269,687, Cl. 204-242.000.
Gill, Hardial S.; and Tegel, Othmar, to Licentia Patent-Verwaltungs-G.m.b.H. Circuit arrangement for generating and stably amplifying broadband rf signals. 4,270,099, Cl. 331-96.000.
Gillespie, George P., to United States of America, Navy. Inflatable mini boat. 4,268,930, Cl. 9-2.00A.
Gilman, Norman W.: *See*—
Fryer, Rodney I.; and Gilman, Norman W., 4,269,774, Cl. 260-245.500.
Giras, Theodore C.: *See*—
Ronnen, Uri G.; Podolsky, Leaman B.; and Giras, Theodore C., 4,270,055, Cl. 290-40.00R.
Girling Limited: *See*—
White, Alfred K.; and Brearley, Malcolm, 4,269,454, Cl. 303-97.000.
Girlock Limited: *See*—
Sawyer, Patrick F., 4,269,453, Cl. 303-6.00C.
Glaenzer Spicer: *See*—
Orain, Michel A., 4,269,460, Cl. 308-233.000.
Glandorf, Frank J.; Wagner, Paul D.; and Keuper, John J., to Siemens-Allis, Inc. Heat exchange arrangement for cooling lubricant for vertical electric motor thrust bearing. 4,270,064, Cl. 310-90.000.
Glass, Carl R. Multi fin post anchor system. 4,269,010, Cl. 52-154.000.
Glass, Howard L.; and Henry, Rodney D., to Rockwell International Corporation. Process for preparing temperature-stabilized low-loss ferrite films. 4,269,651, Cl. 156-601.000.
Glennon, William J.: *See*—
Duckworth, James J.; and Glennon, William J., 4,270,074, Cl. 318-254.000.
Glicksman, Leon R.; and Rohsenow, Warren R., to Massachusetts Institute of Technology. Wet/dry cooling tower and method. 4,269,796, Cl. 261-112.000.
GMT Gesellschaft fur med. Technik mbH: *See*—
Engelbrecht, Eckart; and Nieder, Elmar, 4,268,920, Cl. 3-1.911.
Goehler, Robert F., to Ingersoll-Rand Company. Shock isolation means for an earth compactor drum. 4,269,536, Cl. 404-117.000.
Goeke, Ulrich; and Richter, Michael, to Schering Aktiengesellschaft. Epoxy resin hardening agents from Mannich bases and method for curing. 4,269,742, Cl. 260-18.0PN.
Goeldner, Richard W., to Water Services of America, Inc. Cleaning of heat exchanger tubing. 4,269,264, Cl. 165-95.000.
Goetz, Nelson F.: *See*—
Johnson, Doyle F.; and Goetz, Nelson F., 4,269,234, Cl. 138-121.000.
Gold, Marvin H. High voltage cable splice using condensation reaction polymeric insulation. 4,270,021, Cl. 174-84.00R.
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Goldberg, Leon. Neutron generator. 4,269,659, Cl. 176-9.000.
Goldman, Jerome L.; Breeden, John O. R.; and Michel, Walter H., to Freiede & Goldman, Ltd. Mobile, offshore, self-elevating (jack-up) unit leg/hull rigidification system. 4,269,543, Cl. 405-198.000.
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Lipfert, Donald E.; and Goldschmidt, Willfred, 4,269,527, Cl. 401-200.000.
Goldstein, Leon C., to Prior Tire Enterprises Inc. Cold recapping method for tires. 4,269,644, Cl. 156-96.000.
Gomez, Daniel; and Bartoli, Giampaolo, to Arjomari-Prioux. Fibrous product containing cellulosic fibers, its method of preparation and its use, in particular in the field of covering panels, in lieu of asbestos. 4,269,657, Cl. 162-135.000.
Gomi Patent Office: *See*—
Koide, Fumiharu; and Ohshima, Masami, 4,269,036, Cl. 62-159.000.
Goode, Chester L., to Milton Roy Company. Pump drive mechanism for an evaporative cooler. 4,269,573, Cl. 417-362.000.
Goodman, Hubert C., Jr., to CIR-S.p.A.-Divisione SASIB. Reservoir for rod-like articles. 4,269,299, Cl. 198-347.000.
Goodman, John T.: *See*—
Graham, Teresita O.; and Goodman, John T., 4,269,910, Cl. 429-190.000.
Goodyear Aerospace Corporation: *See*—
Beck, Arnold A.; and Ruof, Edgar J., 4,269,455, Cl. 303-106.000.
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Harrison, John G., 4,269,250, Cl. 152-358.000.
Miller, Donald E., 4,269,763, Cl. 260-45.9QB.
Miller, Rickie L.; and Walters, Noel E., 4,269,646, Cl. 156-128.00N.
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Gordon, Abraham: *See*—
Adler, Stanford L.; and Gordon, Abraham, 4,269,139, Cl. 118-642.000.
Gordon, Bruce E., to Raytheon Company. Multiplexer circuit. 4,270,204, Cl. 370-112.000.
Gordon, Goss E.; and McMillen, David L. Apparatus for detecting malfunction in tying operation on a baler. 4,269,116, Cl. 100-99.000.

Gorke, Klaus; and Bartz, Wilfried, to Chemische Werke Heuls, A.G. Aqueous acid/amino 1,3-butadiene polymer reaction product agent for treating wood and wooden materials. 4,269,626, Cl. 106-18.320.

Gorsler, Karl G., to Deere & Company. Feeding arrangement for an axial flow rotary combine. 4,269,200, Cl. 130-27.00T.

Goto, Kenji: *See—*
Iwata, Toshiharu; Hattori, Tadashi; Mukainakano, Siniti; Goto, Kenji; and Sawada, Daisaku, 4,269,154, Cl. 123-425.000.
Iwata, Toshiharu; Hattori, Tadashi; Mukainakano, Siniti; Goto, Kenji; and Sawada, Daisaku, 4,269,155, Cl. 123-425.000.

Gottesman, Jeffrey L.: *See—*
Brolin, Stephen J.; Gottesman, Jeffrey L.; Morgen, Dennis H.; and Swanson, Kenneth H., 4,270,030, Cl. 179-175.20D.

Gould, Robert K.: *See—*
Allen, Jonathan; and Gould, Robert K., 4,269,507, Cl. 356-36.000.

Gouw, Hoan G.: *See—*
DeVos, Marc F.; and Gouw, Hoan G., 4,269,414, Cl. 273-153.00S.

Graf, Erich: *See—*
Uhlendorf, Joachim; Betzing, Hans; Gabbar, Hamied; Graf, Erich; and Doppelfeld, Ille-Stephanie, 4,269,855, Cl. 424-285.000.

Grafoplast S.A.S.: *See—*
Piana, Ivana, 4,268,986, Cl. 40-316.000.

Graham, James M., III, to Hammond, Nancy Swartz. Electrolytic apparatus for reclaiming dissolved metal from liquid. 4,269,690, Cl. 204-272.000.

Graham, Teresita O.; and Goodman, John T., to Duracell International Inc. Electrochemical cells having a gelled anode-electrolyte mixture. 4,269,910, Cl. 429-190.000.

Grammel, Jurgen: *See—*
Nachtkamp, Klaus; Pedain, Josef; and Grammel, Jurgen, 4,269,748, Cl. 260-29.2TN.

Grammerstorf, Werner, to IPA Bauchemie GmbH. Process for fastening a bonding and sealing device to construction components and/or buildings by forcing injection material into cracks, flaws, and the like. 4,269,014, Cl. 52-749.000.

Gray, Joseph L., to Gray Manufacturing Company, Inc. Jack assembly for truck transmissions, differentials and power dividers. 4,269,394, Cl. 254-134.000.

Gray, Joseph L., to Gray Manufacturing Company, Inc. Swivel lock and tow bar assembly for four-wheel caster jack assembly. 4,269,424, Cl. 280-92.000.

Gray Manufacturing Company, Inc.: *See—*
Gray, Joseph L., 4,269,394, Cl. 254-134.000.
Gray, Joseph L., 4,269,424, Cl. 280-92.000.

Gray, Reginald W. H.: *See—*
Pyne, Bernard; Gray, Reginald W. H.; and Barber, Peter R., 4,270,201, Cl. 368-282.000.

Gray, Robin A.: *See—*
Barford, Eric D.; Gray, Robin A.; and Saul, Michael R., 4,269,723, Cl. 252-106.000.

Green, Howard E.: *See—*
Jones, Robert J.; Green, Howard E.; and Quinlivan, Sandra C., 4,269,961, Cl. 526-262.000.

Green, Martin. Finger arithmetic device. 4,269,597, Cl. 434-198.000.

Greenbank-Cast Basalt Engineering Co. Limited: *See—*
Price, Donald, 4,268,974, Cl. 34-86.000.

Greene, Charles E.: *See—*
Martincic, Paul W.; and Greene, Charles E., 4,270,110, Cl. 336-174.000.

Grejsner, Teddy, to CBS Records ApS. Agent for surface treatment and cleaning of records and similar objects. 4,269,739, Cl. 252-547.000.

Grenoble, Dane C.; Kim, Chang J.; and Murrell, Lawrence L., to Exxon Research & Engineering Company. Method for preparing a group IVB, VB or VIB metal oxide on inorganic refractory oxide support catalyst and the product prepared by said method. 4,269,737, Cl. 252-464.000.

Greve, Peter F.: *See—*
Opheij, Willem G.; and Greve, Peter F., 4,270,045, Cl. 250-204.000.

Gries, Heinz, to Schering Aktiengesellschaft. 2,4,6-Triiodobenzonitrile derivatives and X-ray contrast media comprising them. 4,269,819, Cl. 424-5.000.

Griffin, Phil H.: *See—*
Phillips, Victor Q.; Griffin, Phil H.; and Sharki, Martin J., 4,269,567, Cl. 415-168.000.

Griffith, Ernest S.: *See—*
Davis, William W.; and Griffith, Ernest S., 4,270,214, Cl. 455-80.000.

Griffith, Glen A.; and Sutter, Leroy V., Jr. Drum for an automatic photographic processing system. 4,269,501, Cl. 354-323.000.

Grimshaw, Keith, to English Card Clothing Company Limited, The. Metallic wire type card-clothing. 4,268,937, Cl. 19-114.000.

Grinfa Sociedad de Responsabilidad Limitada: *See—*
Dottori, Roberto B., 4,269,447, Cl. 297-365.000.

Grinin, Vladimir V.; and Shtrikman, Mikhail M. Arc welding machine using non-consumable electrode. 4,270,037, Cl. 219-125.120.

Gronner, Alfred D.; and Simon, David J., to Singer Company, The. Current transformer input system for AC conversion devices. 4,270,061, Cl. 307-270.000.

Gross, Franz, to Siemens Aktiengesellschaft. Traveling wave tube. 4,270,070, Cl. 315-3.500.

Grow, Harry N.: *See—*
Zboralski, Jon A.; Tringali, Richard C.; and Grow, Harry N., 4,269,615, Cl. 55-480.000.

Growney, Lawrence J., to Federal Paper Board Company, Inc. Ice cream cone package. 4,269,316, Cl. 206-499.000.

Grube, William L.: *See—*
MacLean, Barry L.; and Grube, William L., 4,269,248, Cl. 411-186.000.

Gruber, Heinz, to Kusters, Eduard. Method and apparatus for applying a liquid on a moving web in patterns. 4,268,928, Cl. 8-149.000.

Gruber, Oskar: *See—*
Gersmann, Klaus; and Gruber, Oskar, 4,269,446, Cl. 297-341.000.

Gruenewald, Heinz: *See—*
Leibhard, Erich; Gruenewald, Heinz; and Richter, Hanno, 4,269,106, Cl. 411-34.000.

Grundmann, Edgard; and Bernhardt, Winfried, to Volkswagenwerk Aktiengesellschaft. Heat pump drive. 4,269,040, Cl. 62-467.0PR.

Grzhebin, Mikhail Z.: *See—*
Zhestkov, Vladimir M.; Tsypin, Vladimir M.; Grzhebin, Mikhail Z.; Kaminsky, Vadim A.; and Mazepov, Vitaly G., 4,269,599, Cl. 440-88.000.

Grzybkowski, Waclaw: *See—*
Libus, Wlodzimierz; Kluczkowski, Marek; Pilarczyk, Michal; Strzelecki, Henryk; Pastewski, Roman; and Grzybkowski, Waclaw, 4,269,676, Cl. 204-107.000.

GTE Automatic Electric Laboratories Incorporated: *See—*
Miille, Gerard J., 4,270,093, Cl. 331-17.000.
Young, John S., 4,270,028, Cl. 179-84.00R.

GTE Laboratories Incorporated: *See—*
Dakss, Mark L.; Kim, Bumman; and Schlafer, John, 4,269,648, Cl. 156-293.000.

Guardian Electric Manufacturing Company: *See—*
Wright, William W., 4,270,108, Cl. 335-188.000.

Guch, Steve, Jr.; and Lundgren, Gordon L., to Hughes Aircraft Company. Cycloid-scanning laser pumping method and apparatus. 4,270,095, Cl. 331-94.50L.

Gudas, Charles J., to Scholl, Inc. Detorquing heel control device for footwear. 4,268,980, Cl. 36-43.000.

Guerra, John M. Adsorption solar heating and storage system. 4,269,170, Cl. 126-428.000.

Guibert, Raul. Cartridge for hot air oven. 4,269,169, Cl. 126-426.000.

Gumm, Peter: *See—*
Simonek, Rudiger; Gumm, Peter; Idstein, Hermann; and Witte, Horst, 4,269,409, Cl. 271-277.000.

Gunter, Gerhard; and Haeufler, Hartmut, to Akzo N.V. Coating composition having a water-dilutable maleinized oil base, process for the application and baking thereof. 4,269,866, Cl. 427-27.000.

Gurian, Marshall I., to Advanced Systems, Inc. Ion exchange separation method. 4,269,716, Cl. 210-675.000.

Gustavsson, Lennart, to Aktiebolaget Svenska Flaktfabriken. Apparatus for forming a web of material. 4,269,578, Cl. 425-83.100.

Gutleber, Frank S., to United States of America, Army. Combined ECCM/diversity tropospheric transmission system. 4,270,207, Cl. 375-40.000.

H. A. Schlatter AG: *See—*
Zollinger, Hans-Rudolf, 4,270,036, Cl. 219-53.000.

H. G. Weber & Co., Inc.: *See—*
Kidd, Arthur H., 4,269,557, Cl. 414-105.000.

Haber, Edgar: *See—*
Burton, James A.; and Haber, Edgar, 4,269,827, Cl. 424-177.000.

Haberer, Jens: *See—*
Stechmann, Helmut; and Haberer, Jens, 4,270,200, Cl. 368-252.000.

Haberlein, Peter, to Samsonite Corporation. Scanning magnetic test head. 4,270,089, Cl. 324-262.000.

Hackbarth, Klaus: *See—*
Schneider-Muntau, Hans-Jorg; and Hackbarth, Klaus, 4,270,112, Cl. 336-197.000.

Hackman, Donald J.; Brunel, Roger L.; and Williams, Harry L., to United States of America, Navy. Suction cup with lateral gripper. 4,269,383, Cl. 248-544.000.

Haeufler, Hartmut: *See—*
Gunter, Gerhard; and Haeufler, Hartmut, 4,269,866, Cl. 427-27.000.

Hagen, Jens; and Bruns, Klaus, to Henkel Kommanditgesellschaft auf Aktien. Perfume aldehydes from hydroformylation of caryophyllene. 4,270,007, Cl. 568-445.000.

Hageniers, Omer L.: *See—*
Pryor, Timothy R.; Alway, David M.; and Hageniers, Omer L., 4,269,874, Cl. 427-282.000.

Hagiwara, Yoshimune; Sawase, Terumi; Takai, Atsushi; Kita, Yuzo; and Honda, Akira, to Hitachi, Ltd. Electronic tuning type television receiver. 4,270,220, Cl. 455-182.000.

Hagyuda, Nobuyoshi; and Tanaka, Hiroaki, to Nippon Kogaku K.K. Distance information judging circuit for focus detecting apparatus. 4,269,491, Cl. 354-25.000.

Hajimoto, Yoshioki: *See—*
Mochizuki, Noritaka; and Hajimoto, Yoshioki, 4,270,047, Cl. 250-216.000.

Hakamada, Takeshi: *See—*
Sakai, Masahiko; Toyoda, Shinichi; Narahara, Toshikazu; Hakamada, Takeshi; and Tsunoda, Tomoya, 4,269,894, Cl. 428-377.000.

Halbach & Braun: *See—*
Braun, Ernst; and Braun, Gert, 4,269,304, Cl. 198-735.000.

Halbfoster, Christopher: *See—*
Butterworth, Donald J.; Halbfoster, Christopher; and Loudon, Robert, 4,269,707, Cl. 210-777.000.

Haley, Frank P., to FMC Corporation. Traveling loading arm for marine tankers. 4,269,239, Cl. 141-387.000.

Hall, Richard C. Aquarium. 4,269,142, Cl. 119-5.000.

Hallam, Joyce: *See*—
Lind, David J.; Coffey, Valerie J.; and Hallam, Joyce, 4,269,876, Cl. 427-309.000.

Haller, Albert H.: *See*—
Dinella, Donald; Haller, Albert H.; and Polakowski, Theodore D., Jr., 4,269,138, Cl. 118-115.000.

Halliburton Company: *See*—
Wilson, Donald R., 4,269,269, Cl. 166-241.000.

Hamatani, Masahide, to Canon Kabushiki Kaisha. Mounting system for optical lens assembly. 4,269,479, Cl. 350-255.000.

Hamlin, Thomas J., to Xerox Corporation. Document handler. 4,269,406, Cl. 271-108.000.

Hammond, Nancy Swartz: *See*—
Graham, James M., III, 4,269,690, Cl. 204-272.000.

Hamon Sobelco: *See*—
Bosne, Jacques G. P. E.; and Chofflet, Christian A. A., 4,269,794, Cl. 261-108.000.

Hamprecht, Rainer, to Bayer Aktiengesellschaft. Process for the preparation of cyanoazo dyestuffs. 4,269,770, Cl. 260-208.000.

Handtmann, Dieter; Rau, Helmut; and Zabler, Erich, to Robert Bosch GmbH. Pressure sensor, especially for intake air suction pressure. 4,269,069, Cl. 73-705.000.

Hane, Naruaki: *See*—
Ejima, Shozo; Tomioka, Susumu; Matsumoto, Tadao; and Hane, Naruaki, 4,269,888, Cl. 428-296.000.

Hanes, Maurice H.: *See*—
Schlegel, Earl S.; and Hanes, Maurice H., 4,270,135, Cl. 357-19.000.

Hankins, Frederick E.; and Umberger, John H., to Research-Cottrell, Inc. Electromagnetic plunger drop timer. 4,270,086, Cl. 368-118.000.

Hanna, John E., to Motorola, Inc. "D" Flip-flop. 4,270,062, Cl. 307-272.00A.

Hansen, Frederick W.: *See*—
Van Arman, William L.; Kambs, Russell A.; Ivankovics, Steven G.; Hansen, Frederick W.; and Julow, Thomas M., 4,268,945, Cl. 29-407.000.

Hansen, John M., to Emerson Electric Co. Belt sander for sanding external and internal surfaces. 4,268,998, Cl. 51-148.000.

Hanyuda, Toshiaki: *See*—
Morohashi, Yasushi; Komatsu, Yasuji; Hanyuda, Toshiaki; Takiyama, Eiichiro; Horishima, Tohei; and Sugimoto, Kenji, 4,269,869, Cl. 427-54.100.

Happer, George T., to Happer Systems Limited. Below surface ducting. 4,269,231, Cl. 138-92.000.

Happer Systems Limited: *See*—
Happer, George T., 4,269,231, Cl. 138-92.000.

Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, to Fuji Photo Film Co., Ltd. Stabilization of organic substrate materials including photographic dye images against the action of light. 4,269,926, Cl. 430-216.000.

Hara, Hiroshi: *See*—
Yamagishi, Michio; Kawashima, Akira; Mizutani, Taku; Hara, Hiroshi; Mizoue, Kazutoshi; Omura, Sadafumi; Seto, Haruo; and Otake, Noboru, 4,269,971, Cl. 536-17.00R.

Harada, Katsumasa: *See*—
Nakai, Mamoru; Harada, Katsumasa; and Mori, Yoshikatsu, 4,269,982, Cl. 548-127.000.

Harada, Syuji: *See*—
Nakai, Kiyoshi; Miyajima, Hidenobu; and Harada, Syuji, 4,269,333, Cl. 222-484.000.

Harbert, Charles A.: *See*—
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,270,005, Cl. 568-328.000.

Harding, John D. Tunnel roof supporting apparatus. 4,269,547, Cl. 405-303.000.

Hardy, Robert A., Jr.; Baker, Jannie S.; and Quinones, Nicanor Q., to American Cyanamid Company. (Substituted-phenyl)-1,2,4-triazolo[4,3-c]pyrimidines and (substituted-phenyl)-1,2,4-triazolo[1,5-c]pyrimidines. 4,269,980, Cl. 544-256.000.

Hareyama, Kyuichi, to Nippon Electric Co., Ltd. Constant-current circuit. 4,270,081, Cl. 323-316.000.

Harman, Jefferson H., to PerSci, Inc. Position control in disk drive system. 4,270,073, Cl. 318-632.000.

Harms, John F. Portable cook book holder. 4,269,381, Cl. 248-222.200.

Harms, Walter: *See*—
Larson, Eugene R.; and Harms, Walter, 4,269,246, Cl. 81-460.000.

Harrington, Wilfred H.; and Jackson, William L., to Dunlop Limited. Tire and wheel assemblies. 4,269,251, Cl. 152-362.00R.

Harris Corporation: *See*—
MacDavid, Kenneth R., 4,270,208, Cl. 375-76.000.
Rivoli, Anthony L.; Morcom, William R.; Nicolay, Hugh C.; and Cox, Eugene R., 4,269,636, Cl. 148-175.000.

Harrison, Christopher R. B., to Wilkinson Sword, Ltd. Hand tools. 4,268,963, Cl. 30-262.000.

Harrison, John G., to Goodyear Tire & Rubber Company, The. Rubber composition having improved adhesion to metal cord. 4,269,250, Cl. 152-358.000.

Hart, Andrew J.: *See*—
Nailor, Michael T.; and Hart, Andrew J., 4,269,255, Cl. 160-381.000.

Hartman, John M.; and Lancaster, Arthur L., to Hughes Aircraft Company. Charge coupled device with high speed input and output. 4,270,144, Cl. 307-221.00D.

Hartmann, Karl-Heinz: *See*—
Fischer, Rudolf; and Hartmann, Karl-Heinz, 4,269,402, Cl. 493-437.000.

Haruna, Masao: *See*—
Inagami, Kaoru; Ohmura, Kazutaka; Haruna, Masao; and Terabayashi, Takeshi, 4,269,863, Cl. 426-550.000.

Harvey, Kenneth: *See*—
Baines, Eric; and Harvey, Kenneth, 4,269,823, Cl. 424-52.000.

Hasegawa, Katsuji, to Meinan Machinery Works, Inc. Veneer lathe. 4,269,243, Cl. 144-213.000.

Hasegawa, Katsuji, to Meinan Machinery Works, Inc. Reinforced veneer and method of reinforcing a veneer sheet. 4,269,883, Cl. 428-120.000.

Hashimoto, Shunichi: *See*—
Kirino, Osamu; Hashimoto, Shunichi; Matsumoto, Hiroshi; and Oshio, Hiromichi, 4,270,002, Cl. 564-221.000.

Hashimoto, Yasuyuki; and Torii, Osamu, to Ancos Co., Ltd. Mechanical pencil. 4,269,524, Cl. 401-65.000.

Hashimoto, Yukio: *See*—
Morokawa, Shigeru; Sekiya, Fukuo; Hashimoto, Yukio; Nomura, Yasushi; and Koga, Keiichiro, 4,270,194, Cl. 368-73.000.

Hashiride, Tadaaki: *See*—
Hida, Takashi; Mitsui, Tsutomu; Kuwana, Kazutaka; and Hashiride, Tadaaki, 4,269,045, Cl. 66-75.200.

Hastie, Anthony M. B. Process for recovering bitumen from waste bituminous products. 4,269,693, Cl. 208-39.000.

Hastings, Charles E. Adjustable ratchet pliers. 4,269,089, Cl. 81-410.00R.

Hatsuno, Hiroshi; Machida, Toshio; Fukushima, Mitsuo; and Ogawa, Shinji, to Diesel Kiki Co., Ltd. Leakage sensor apparatus for fluid passageway. 4,269,061, Cl. 73-40.000.

Hattori, Kyo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Secondary air supply system for the exhaust system of an internal combustion engine. 4,269,028, Cl. 60-276.000.

Hattori, Tadashi: *See*—
Iwata, Toshiharu; Hattori, Tadashi; Mukainakano, Siniti; Goto, Kenji; and Sawada, Daisaku, 4,269,154, Cl. 123-425.000.
Iwata, Toshiharu; Hattori, Tadashi; Mukainakano, Siniti; Goto, Kenji; and Sawada, Daisaku, 4,269,155, Cl. 123-425.000.

Hatuse, Toshikazu: *See*—
Tamura, Munetaka; and Hatuse, Toshikazu, 4,270,198, Cl. 368-220.000.

Hauan, Nils F., to Skuteng A/S. Barrier attached to the side of a ship. 4,269,538, Cl. 405-63.000.

Hausam, Leonard P. Dispenser for paper-like containers. 4,269,324, Cl. 221-36.000.

Hauser, Stephen G., to Rincon Industries, Inc. Heating unit with indicator for disinfecting soft lenses, or the like. 4,270,039, Cl. 219-439.000.

Haux, Ulrich; and Voigt, Werner, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Apparatus for controlling explosive decompressions in an aircraft or spaceship. 4,269,376, Cl. 244-117.00R.

Hayashi, Izuo; and Furruse, Takao, to Nippon Electric Co., Ltd. Semiconductor laser device. 4,270,096, Cl. 331-94.50H.

Heat and Control, Inc.: *See*—
Caridis, Andrew A.; Benson, Clark K.; Leary, Steven G.; and Nilsen, Arthur A., 4,269,861, Cl. 426-438.000.

Heater, Charles P. Method and means for stacking flat flexible sheets. 4,269,408, Cl. 271-212.000.

Heddon, Will. Modular bowling lane system. 4,269,411, Cl. 273-51.000.

Heilen, Gerd; Nissen, Axel; and Woerz, Otto, to BASF Aktiengesellschaft. Preparation of aliphatic carbonyl compounds. 4,270,006, Cl. 568-396.000.

Heinemann Electric Company: *See*—
Richter, Konrad J., Sr., 4,270,035, Cl. 200-294.000.

Heinkel Industriezentrifugen GmbH & Co., Firma: *See*—
Gerteis, Hans, 4,269,711, Cl. 210-232.000.

Heise, Hartmut; Hille, Ernst; Wagner, Reinhard; and Kummerle, Kurt, to Hoechst Aktiengesellschaft. Process for the preparation of benzimidazolone-(2). 4,269,989, Cl. 548-305.000.

Heldmaier, Emil: *See*—
Konig, Karl; and Heldmaier, Emil, 4,269,425, Cl. 280-403.000.

Helphos-Autolight Schardmuller & Co.: *See*—
Hoffmann, Alfred, 4,270,033, Cl. 200-84.00C.

Henderson, George H. Wheel lock. 4,269,049, Cl. 70-227.000.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Hagen, Jens; and Bruns, Klaus, 4,270,007, Cl. 568-445.000.

Henrick, Clive A., to Zoecon Corporation. Certain pyridylmethyl esters of formamido-lower-alkanoates and derivatives thereof. 4,269,981, Cl. 546-291.000.

Henry, Rodney D.: *See*—
Glass, Howard L.; and Henry, Rodney D., 4,269,651, Cl. 156-601.000.

Hentschel, Klaus; Bittner, Friedrich; and Schreyer, Gerd, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of suspension or solution of cyanuric chloride in organic solvents (II). 4,269,979, Cl. 544-190.000.

Hermann Berstorff Maschinenbau GmbH: *See*—
Anders, Dietmar; and Brand, Wilhelm, 4,269,085, Cl. 74-665.0GA.
Gersbeck, Rolf; and Krohn, Manfred, 4,269,585, Cl. 425-373.000.

Herper, John C.; and Stangel, John J., to Sperry Corporation. Apparatus and method for realizing preselected free space antenna patterns. 4,270,129, Cl. 343-703.000.

Heuer, Dale A.: *See*—
Brossard, Michael E.; Heuer, Dale A.; and Wu, Philip T., 4,270,189, Cl. 365-205.000.

Heyer, Wayne D.: *See—*
Faulkner, Bobby P.; Heyer, Wayne D.; and Weinecke, Michael H., 4,269,593, Cl. 432-58.000.
Hickey, John J. Hybrid annular airship. 4,269,375, Cl. 244-26.000.
Hickinbotham, Lawrence F.: *See—*
Schwarz, Gail B.; and Hickinbotham, Lawrence F., 4,269,114, Cl. 100-53.000.
Hickman, Lewis, to Products for Energy, Inc. Process and apparatus for severing limbs. 4,269,241, Cl. 144-2.00Z.
Hickson, Charles H.; and Chandramouli, Pitchaiya, to Borden, Inc. Phenol formaldehyde resin for hardboard applications. 4,269,949, Cl. 525-58.000.
Hida, Takashi; Mitsui, Tsutomu; Kuwana, Kazutaka; and Hashiride, Tadaaki, to Aisin Seiki Kabushiki Kaisha. Home knitting machine for producing programmed designs. 4,269,045, Cl. 66-75.200.
Hiebert, Inc.: *See—*
Timmons, Jay, 4,269,005, Cl. 52-36.000.
Hilbert, Ray. Apparatus and method for counting the number of shaves for which a razor blade is used. 4,268,958, Cl. 30-34.00A.
Hile, James R., to Carrier Corporation. Method of securing a capillary tube passing through a wall. 4,268,947, Cl. 29-451.000.
Hill, James B.: *See—*
Saeed, Amin; and Hill, James B., 4,269,384, Cl. 248-548.000.
Hill, Michael D. Burglar alarm. 4,269,136, Cl. 116-95.000.
Hille, Ernst: *See—*
Heise, Hartmut; Hille, Ernst; Wagner, Reinhard; and Kummerle, Kurt, 4,269,989, Cl. 548-305.000.
Hills, Brian A., to United States of America, Navy. Hydrogen-oxygen mixer apparatus and process. 4,269,791, Cl. 261-36.00R.
Hilti Aktiengesellschaft: *See—*
Leibhard, Erich; Gruenewald, Heinz; and Richter, Hanno, 4,269,106, Cl. 411-34.000.
Hirata, Hiromasa: *See—*
Imai, Isao; Hirata, Hiromasa; Kawanami, Takao; and Omura, Yasuhiro, 4,269,052, Cl. 72-39.000.
Hirosawa, Shunichi: *See—*
Oki, Takeo; and Hirosawa, Shunichi, 4,269,528, Cl. 401-231.000.
Hirsch, Henry M. Trash bag holder. 4,269,441, Cl. 294-1.00R.
Hitachi, Ltd.: *See—*
Hagiwara, Yoshimune; Sawase, Terumi; Takai, Atsushi; Kita, Yuzo; and Honda, Akira, 4,270,220, Cl. 455-182.000.
Murata, Toshinori; and Matsuura, Shigeo, 4,270,215, Cl. 455-158.000.
Murata, Toshinori; and Matsuura, Shigeo, 4,270,219, Cl. 455-179.000.
Nakazawa, Tetsuo; Sakai, Junji; and Morimoto, Syogo, 4,269,256, Cl. 164-16.000.
Nonogaki, Saburo; Morishita, Hajime; Uchino, Shoichi; and Manabe, Toshikatsu, 4,269,918, Cl. 430-28.000.
Noto, Koichi; and Kawai, Tsuneo, 4,268,999, Cl. 51-165.720.
Sakai, Masahiko; Toyoda, Shinichi; Narahara, Toshikazu; Hakamada, Takeshi; and Tsunoda, Tomoya, 4,269,894, Cl. 428-377.000.
Shibuya, Yoshimichi; Kawamura, Hiromitsu; Kando, Yasuhiko; and Koyama, Masaharu, 4,269,617, Cl. 65-43.000.
Takeda, Yutaka; Aiki, Kunio; and Ito, Ryoichi, 4,270,134, Cl. 357-19.000.
Hitachi Metals, Ltd.: *See—*
Fuyama, Moriaki; Honda, Haruhiko; and Ura, Mitsuru, 4,269,899, Cl. 428-457.000.
Hock, Franz; Dopper, Franz-Herbert; and Stock, Gert, to Temafa Textilemaschinenfabrik GmbH. Cyclone separator for the removal of heavy particles and dust particles from fibre material. 4,269,701, Cl. 209-23.000.
Hodapp, Otto; and Lindner, Ulrich, to Christian Majer KG Maschinenfabrik. Arrangement for cutting guided cylindrical sleeves. 4,269,091, Cl. 82-48.000.
Hodson, James V. Composition for paint stripper. 4,269,724, Cl. 252-171.000.
Hoechst Aktiengesellschaft: *See—*
Botchert, Herbert; Albert, Walter; Kohaut, Gunter; Schulte, Ulrich; and Rapp, Bruno, 4,269,895, Cl. 428-402.000.
Heise, Hartmut; Hille, Ernst; Wagner, Reinhard; and Kummerle, Kurt, 4,269,989, Cl. 548-305.000.
Moraw, Roland, 4,269,915, Cl. 430-11.000.
Moraw, Roland; and Schadlich, Renate, 4,269,932, Cl. 430-290.000.
Neeb, Rudolf; Hohmann, Kurt; and Mohr, Reinhard, 4,269,768, Cl. 260-146.00R.
Simonek, Rudiger; Gumm, Peter; Idstein, Hermann; and Witte, Horst, 4,269,409, Cl. 271-277.000.
Hoehn, Hans: *See—*
Denzel, Theodor; and Hoehn, Hans, 4,269,836, Cl. 424-246.000.
Hoff, David C.: *See—*
Robinson, Robert L.; Hoff, David C.; and Midling, Robert L., 4,270,183, Cl. 364-900.000.
Hoffmann, Alfred, to Helphos-Autolight Schardmuller & Co. Brake-fluid level detector. 4,270,033, Cl. 200-84.00C.
Hoffmann, James E.: *See—*
Falk, Terrence F.; Schultz, Terrence R.; and Hoffmann, James E., 4,270,213, Cl. 455-77.000.
Hoffmann-La Roche Inc.: *See—*
Dorn, Silvia; Pfiffner, Albert; and Zurfluh, Rene, 4,270,009, Cl. 568-670.000.
Fryer, Rodney I.; and Gilman, Norman W., 4,269,774, Cl. 260-245.500.
Mohacsi, Ernest, 4,270,000, Cl. 564-174.000.
Muller, Peter M.; Pfister, Rudolf; and Urban, Rene, 4,269,788, Cl. 260-501.100.
Hoffner, Karl: *See—*
Thye, Jurgen; and Hoffner, Karl, 4,270,019, Cl. 174-32.000.
Hogan, Alfred D., to Geosource, Inc. Sphere launching apparatus. 4,268,932, Cl. 15-104.06A.
Hogan, John C.; and Gibson, Alan F., to Armco Inc. Means for reclaiming galvanizing quality zinc alloy from continuous galvanizing line top dross. 4,269,398, Cl. 266-230.000.
Hohmann, Kurt: *See—*
Neeb, Rudolf; Hohmann, Kurt; and Mohr, Reinhard, 4,269,768, Cl. 260-146.00R.
Holland, Eric O.; and Johnson, Marvin M., to Phillips Petroleum Company. Method of removing contaminant from a feedstock stream. 4,269,694, Cl. 208-48.00R.
Holland, Robert E.: *See—*
Brennan, James A.; Caesar, Philip D.; Ciric, Julius; Garwood, William E.; and Holland, Robert E., 4,269,783, Cl. 518-718.000.
Holldorff, Gunther, to Borsig GmbH. Absorption refrigerating machine with storage device for operation with yield of heat energy and refrigerating requirement different in time. 4,269,041, Cl. 62-476.000.
Holley-Donawa, Gloria. Animal excrement and urine receptacle apparatus. 4,269,148, Cl. 119-95.000.
Holonyak, Nick, Jr., to University of Illinois Foundation. Semiconductor light emitting device. 4,270,094, Cl. 331-94.50H.
Holt, William D., to Lucas Industries Limited. Battery isolator switches for use in road vehicles. 4,270,057, Cl. 307-10.0BP.
Holub, Fred F.; and Macke, Gerald F., to General Electric Company. Composition comprising aromatic polycarbonate and passivated wollastonite filler particles. 4,269,755, Cl. 260-37.0PC.
Homan, Gary R., to Dow Corning Corporation. Oxygen-curable mercaptoorganosiloxane compositions possessing rapid surface reaction and method of forming higher molecular weight products therefrom. 4,269,741, Cl. 260-18.00S.
Homan, Gary R.; and Lee, Chi-Long, to Dow Corning Corporation. Mercaptoorganopolysiloxanes and curable compositions including same. 4,269,963, Cl. 528-17.000.
Homan, Gary R.; and Toporcer, Louis H., to Dow Corning Corporation. Novel mercaptoorganosiloxanes. 4,269,991, Cl. 556-427.000.
Honda, Akira: *See—*
Hagiwara, Yoshimune; Sawase, Terumi; Takai, Atsushi; Kita, Yuzo; and Honda, Akira, 4,270,220, Cl. 455-182.000.
Honda, Haruhiko: *See—*
Fuyama, Moriaki; Honda, Haruhiko; and Ura, Mitsuru, 4,269,899, Cl. 428-457.000.
Honeywell Inc.: *See—*
Wada, Norikazu, 4,269,071, Cl. 73-861.120.
Hooker Chemicals & Plastics Corp.: *See—*
Lang, Edward J.; and Dubenitz, Michael G., 4,269,754, Cl. 260-33.60R.
Hooper, Inc.: *See—*
Jezuit, Arthur D.; and Geu, Edwin J., 4,268,973, Cl. 34-69.000.
Hoover, Francis W. Automatic pump sequencing and flow rate modulating control system. 4,269,569, Cl. 417-5.000.
Hopke, Scott W., to Exxon Production Research Company. Method for preventing damage to a refrigerated gas pipeline due to excessive frost heaving. 4,269,539, Cl. 405-130.000.
Hoppe, Joachim A.: *See—*
Escaron, Pierre C.; and Hoppe, Joachim A., 4,269,063, Cl. 73-151.000.
Horike, Akihiro: *See—*
Suzuki, Kazuyoshi; Takahashi, Teruo; Shingu, Tadashi; Naka, Kiyomi; and Horike, Akihiro, 4,269,931, Cl. 430-271.000.
Horishima, Tohei: *See—*
Morohashi, Yasushi; Komatsu, Yasuji; Hanyuda, Toshiaki; Takiyama, Eiichiro; Horishima, Tohei; and Sugimoto, Kenji, 4,269,869, Cl. 427-54.100.
Hornby, Roger B.; Lipps, Bennie J.; and Savage, Charles E., to Cordis Dow Corp. Hollow fiber separatory element and method of making same. 4,269,712, Cl. 210-321.300.
Horton, Francis B. Trolley and track. 4,269,254, Cl. 160-206.000.
Horvath, Zoltan; Muggli, Jurg; Ackermann, Hans; and Tresch, Erwin, to Cerberus Ag. Smoke detector. 4,269,510, Cl. 356-338.000.
Hou, Ching-Tsang: *See—*
Patel, Ramesh N.; Hou, Ching-Tsang; and Laskin, Allen I., 4,269,940, Cl. 435-148.000.
Houle, Conrad G.; Howe, Dennis G.; Thomas, Harold T.; Wrobel, Joseph J.; and Fike, Bruce G., deceased (by Fike, Joyce A., executrix), to Eastman Kodak Company. Thermal deformation record device with bleachable dye. 4,270,130, Cl. 346-77.00E.
Houn, Lin P. Automatic sound-emitted self-learning toy. 4,268,978, Cl. 434-330.000.
House, Roy F., to NL Industries, Inc. Spheroidal plastic coated magnetizable particles and their use in drilling fluids. 4,269,279, Cl. 175-66.000.
Howard, Curtis E.; and Calvin, Douglas G., to Texaco Inc. Steam manifold distribution system for providing equal quality of steam in two lines. 4,269,211, Cl. 137-2.000.
Howe, Dennis G.: *See—*
Houle, Conrad G.; Howe, Dennis G.; Thomas, Harold T.; Wrobel, Joseph J.; and Fike, Bruce G., deceased, 4,270,130, Cl. 346-77.00E.
Howe, Steven C.: *See—*
Norton, Richard V.; and Howe, Steven C., 4,270,014, Cl. 585-22.000.

Hsu, Yung-San. Position indicating unit for sewing machines. 4,269,132, Cl. 112-275.000.

Huang, C. Peter: *See—*
Edwards, William M.; and Huang, C. Peter, 4,269,812, Cl. 423-242.000.

Huang, Fu C.; and Musser, John H., to USV Pharmaceutical Corporation. Heterocyclic compounds useful as anti-allergy agents. 4,269,846, Cl. 424-269.000.

Huang, Warren: *See—*
Lim, John; Huang, Warren; and Brady, Michael, 4,269,815, Cl. 423-328.000.

Huber, John H., to AMP Incorporated. Connector and strain relief for flat transmission cable. 4,269,466, Cl. 339-107.000.

Hughes Aircraft Company: *See—*
Guch, Steve, Jr.; and Lundgren, Gordon L., 4,270,095, Cl. 331-94.50L.
Hartman, John M.; and Lancaster, Arthur L., 4,270,144, Cl. 307-221.00D.
Lim, Hong S.; and Verzwyvelt, Scott A., 4,269,913, Cl. 429-251.000.
Pines, Michael Y.; and Levy, Israel D., 4,270,060, Cl. 307-221.00D.
Yamagishi, Frederick G., 4,269,896, Cl. 428-411.000.

Hughes, Donald W. K., to AMP Incorporated. Electrical connector receptacle having molded conductors. 4,269,467, Cl. 339-126.00R.

Hughes, J. Walter, to Contour-Concept, Inc. Golf club grip. 4,269,412, Cl. 273-81.300.

Hughes, William C., to General Electric Company. Transceiver for phase-shift modulated carrier signals. 4,270,206, Cl. 375-9.000.

Hulyalkar, Ramchandra K.; and Baum, Gerald A., to Dart Industries Inc. Low toxicity vinyl halide stabilizer compositions. 4,269,743, Cl. 260-23.0XA.

Hulyalkar, Ramchandra K.; and Baum, Gerald A., to Dart Industries Inc. Vinyl halide stabilizer compositions. 4,269,744, Cl. 260-23.0XA.

Humlong, Robert F., to Wald Manufacturing Co., Inc. Mounting means for bicycle baskets. 4,269,336, Cl. 224-36.000.

Hunt, David J.; and Reddaway, Stewart F., to International Computers Limited. Array processor. 4,270,169, Cl. 364-200.000.

Hunt, Patrick T. Cold weather breathing mask. 4,269,183, Cl. 128-201.130.

Hunt, Richard J., to Pye Limited. Chromatographic apparatus. 4,269,710, Cl. 210-198.200.

Huther, Ernst: *See—*
Kopp, Josef; Huther, Ernst; and Bohlander, Ernst, 4,269,016, Cl. 53-546.000.

Huwood Limited: *See—*
Saunders, Graham J., 4,269,546, Cl. 405-294.000.

Hwang, Ki-Sup, to Mead Corporation, The. Waterproof infrared absorptive jet printing ink. 4,269,627, Cl. 106-22.000.

Hyosu, Yoshihiko: *See—*
Wakimoto, Saburo; Miyahara, Sadayasu; and Hyosu, Yoshihiko, 4,269,760, Cl. 260-42.530.

Iakwa, Kazuo, to Canon Kabushiki Kaisha. Flash device. 4,270,079, Cl. 320-1.000.

Ibbott, Jack K. Carburetor for internal combustion engine. 4,269,793, Cl. 261-65.000.

Icesij A.G.: *See—*
Olivieri, Icaro, 4,268,981, Cl. 36-115.000.

Ichikawa, Singo, to Citizen Watch Company Limited. Electronic timepiece. 4,270,193, Cl. 368-47.000.

Ichimiya, Yoshichika; Sudo, Tsuneta; Maruyama, Hiromi; Sugamori, Shigeru; Sumida, Susumu; Shimizu, Masao; and Wakita, Toshiaki, to Nippon Telegraph and Telephone Public Corporation; and Takeda Riken Kogyo Kabushikikaisha. High speed data logical comparison device. 4,270,116, Cl. 340-146.200.

Ichimura, Kunihiro, to Agency of Industrial Science and Technology; and Ministry of International Trade & Industry. Method for enzyme immobilization. 4,269,941, Cl. 435-182.000.

Ichinose, Isao; Mori, Fumio; and Suzuki, Noboru, to Toyo Seikan Kaisha, Ltd. Peelable bonded structures and process for preparing same. 4,269,321, Cl. 215-343.000.

Ida, Masatoshi, to Olympus Optical Co., Ltd. Magnetic tape reproduction device. 4,270,152, Cl. 360-74.400.

Idstein, Hermann: *See—*
Simonek, Rudiger; Gumm, Peter; Idstein, Hermann; and Witte, Horst, 4,269,409, Cl. 271-277.000.

Iida, Yasuhiro: *See—*
Terade, Kiichi; and Iida, Yasuhiro, 4,270,066, Cl. 310-258.000.

Ikeda, Minoru: *See—*
Yoshioka, Teruhiko; Matsuzawa, Hideo; Okada, Kazuya; and Ikeda, Minoru, 4,269,705, Cl. 562-600.000.

Ikeda, Susumu: *See—*
Tokuda, Takuro; Ikeda, Susumu; Kubota, Yoshikazu; Takagi, Tutomu; and Kokagi, Yuuichi, 4,269,857, Cl. 424-325.000.

Ikeda, Yasunari: *See—*
Suzuki, Tadahiko; and Ikeda, Yasunari, 4,270,216, Cl. 455-159.000.

Ikemoto, Yoshiyuki: *See—*
Yabune, Hideo; and Ikemoto, Yoshiyuki, 4,269,972, Cl. 536-71.000.

Ikeno, Teruo; Kado, Satoshi; Ayusawa, Saburo; Kawasaki, Hironobu; and Watanabe, Takashi, to Nippon Steel Corporation. Manganese surface coated steel materials. 4,269,904, Cl. 428-623.000.

Ikeuchi, Hideki: *See—*
Ohkoshi, Isao; and Ikeuchi, Hideki, 4,269,285, Cl. 187-9.00R.

Ikonomou, Aristarchos S. Earthquake guarding system. 4,269,011, Cl. 52-167.000.

Illinois Tool Works Inc.: *See—*
Platt, John R., 4,269,308, Cl. 206-150.000.
Sygnator, Henry A., 4,269,902, Cl. 428-577.000.

Imai, Isao; Hirata, Hiromasa; Kawanami, Takao; and Omura, Yasuhiro, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha; and Nippon Steel Corporation. Mechanical descaling device. 4,269,052, Cl. 72-39.000.

Imai, Tamotsu, to UOP Inc. Production of dialkyl formamide. 4,269,998, Cl. 564-132.000.

IMI Kynoch Limited: *See—*
Gilbert, John R. B.; and Baldwin, Peter H., 4,269,687, Cl. 204-242.000.

Immler, Josef, to Siemens Aktiengesellschaft. Circuit arrangement for producing a regulated high DC voltage from a three-phase current. 4,270,166, Cl. 363-89.000.

Imperial Chemical Industries Limited: *See—*
Ballard, Denis G. H.; Meredith, William N. E.; and Rideal, Graham R., 4,269,628, Cl. 106-86.000.
Davies, George E.; and Foulkes, David M., 4,269,820, Cl. 424-10.000.
Milner, John A.; and Turner, Roger M., 4,269,702, Cl. 209-166.000.
Thomas, Berwyn C., 4,269,579, Cl. 425-111.000.
Worthington, Paul A.; and Shephard, Margaret C., 4,269,845, Cl. 424-269.000.

Inagami, Kaoru; Ohmura, Kazutaka; Haruna, Masao; and Terabayashi, Takeshi, to Calpis Shokuhin Kogyo Kabushiki Kaisha. Starch and agar containing noodles and process of preparing. 4,269,863, Cl. 426-550.000.

Inata, Hiroo; Ogasawara, Makoto; Morinaga, Tsuto; and Norike, Akihiro, to Teijin Limited. Cured or uncured aromatic polyester composition and process for its production. 4,269,947, Cl. 525-10.000.

Indesit Industria Elettrodomestici Italiana S.p.A.: *See—*
Farina, Attilio, 4,270,145, Cl. 358-188.000.

Ingber, Lawrence K.; and Strangio, Francis J., to Swisstronics, Inc. Method and apparatus for marking miniature turned parts. 4,269,090, Cl. 82-1.00C.

Ingersoll-Rand Company: *See—*
Goehler, Robert F., 4,269,536, Cl. 404-117.000.
Perkins, Joseph K., 4,269,656, Cl. 162-30.00R.

Ingram, Alvin R.: *See—*
Blommers, Elizabeth A.; Poole, William J.; and Ingram, Alvin R., 4,269,871, Cl. 427-222.000.

Inoue, Hitoshi; Watanabe, Kenichi; and Sumimoto, Takashi, to Toyo Kogyo Co., Ltd. Independent wheel suspension for motor vehicles. 4,269,432, Cl. 280-690.000.

Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,269,672, Cl. 204-23.000.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Gap distance control electroplating. 4,269,672, Cl. 204-23.000.

Inoue, Sadao; Umemura, Tetsuya; Suzuki, Hiroshi; and Kuroyanagi, Takashi, to Furukawa Metals Company, Ltd. Copper alloy for reliable electrical connection. 4,269,623, Cl. 75-157.500.

Inoue, Shinichi: *See—*
Toyokura, Nobuo; Tokunaga, Hiroshi; Inoue, Shinichi; Ishikawa, Hajime; and Shinoda, Masaichi, 4,270,136, Cl. 357-23.000.

Institute of Gas Technology: *See—*
Babu, Suresh P.; and Knight, Richard A., 4,269,692, Cl. 208-8.0LE.

Institutes of Medical Sciences, The: *See—*
Persidsky, Maxim D., 4,269,718, Cl. 210-787.000.

Insulation Sales Co.: *See—*
Ward, Bruce K., 4,269,007, Cl. 52-92.000.

Intel Corporation: *See—*
Koehler, Robert J.; and Bayliss, John A., 4,270,167, Cl. 364-200.000.

International Business Machines Corporation: *See—*
Anantha, Narasipur G.; and Srinivasan, Gurumakonda R., 4,269,631, Cl. 148-1.500.
Bringol, Charles R., 4,270,124, Cl. 340-731.000.
Brossard, Michael E.; Heuer, Dale A.; and Wu, Philip T., 4,270,189, Cl. 365-205.000.
Christopherson, Warren A., 4,270,092, Cl. 330-257.000.
Duran, John; Missel, Leo; and Montelbano, Thomas O., 4,269,968, Cl. 528-351.000.
Gaensslen, Fritz H.; and Spiller, Eberhard A., 4,268,952, Cl. 29-571.000.
Lee, Ho C.; Rickenbach, David H.; and Zable, Jack L., 4,269,117, Cl. 101-93.020.
Shattuck, Meredith D.; and Weiche, William J., 4,269,892, Cl. 428-337.000.
Tynan, Eugene E.; Dreyfus, Russell W.; and von Gutfeld, Robert J., 4,269,067, Cl. 73-643.000.

International Computers Limited: *See—*
Hunt, David J.; and Reddaway, Stewart F., 4,270,169, Cl. 364-200.000.
Reddaway, Stewart F., 4,270,170, Cl. 364-200.000.

International Flavors & Fragrances Inc.: *See—*
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,269,862, Cl. 426-536.000.

International Harvester Company: *See—*
Venere, Lawrence A.; and Domes, E. A., 4,269,002, Cl. 51-281.0SF.

International Telephone and Telegraph Corporation: *See—*
Agrawal, Bhagwati P.; and Shenoi, Kishan, 4,270,027, Cl. 179-81.00R.
Albanese, Damian F., 4,270,209, Cl. 375-96.000.
Shenoi, Kishan; and Agrawal, Bhagwati P., 4,270,026, Cl. 179-15.55R.

Iolab Corporation: *See*—
LaHaye, Peter G., 4,269,307, Cl. 206-5.100.
Ionomet Company, Inc.: *See*—
Masters, Joseph I.; and Goldberg, Gershon M., 4,269,935, Cl. 430-323.000.
IPA Bauchemie GmbH: *See*—
Grammerstorf, Werner, 4,269,014, Cl. 52-749.000.
Irvin, Eugene, Jr. Ignition device for internal combustion engine. 4,269,160, Cl. 123-620.000.
Irwin, Robert S., to Du Pont de Nemours, E. I., and Company. Aromatic polyester which forms optically anisotropic melts and filaments thereof. 4,269,965, Cl. 528-128.000.
Ise, Yukihiko: *See*—
Terada, Jiro; Nitta, Tsuneharu; and Ise, Yukihiko, 4,270,085, Cl. 324-65.00R.
Ishida, Masayuki, to Toyo Suisan Kaisha, Ltd. Apparatus for producing instant cupped noodles. 4,269,113, Cl. 99-404.000.
Ishida, Nakao: *See*—
Matsuda, Yoshiji; Tamura, Keiji; Motoki, Hiroaki; Kitame, Fumio; and Ishida, Nakao, 4,269,765, Cl. 260-112.00B.
Ishihara, Haruji: *See*—
Shiozawa, Kazuo; Yagi, Michio; Suzuki, Kijiro; Aratame, Kazuhisa; Shimokawa, Ryushi; and Ishihara, Haruji, 4,269,494, Cl. 354-60.00L.
Ishii, Toshiaki; and Watanabe, Eiki, to Mitsubishi Denki Kabushiki Kaisha. Speed control apparatus for elevator system. 4,269,286, Cl. 187-29.00R.
Ishikawa, Hajime: *See*—
Toyokura, Nobuo; Tokunaga, Hiroshi; Inoue, Shinichi; Ishikawa, Hajime; and Shinoda, Masaichi, 4,270,136, Cl. 357-23.000.
Ishikawa, Muneharu; and Kimoto, Kazuo, to Osaka Gas Company, Limited. Activated sludge treatment method of waste water. 4,269,714, Cl. 210-627.000.
Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See*—
Imai, Isao; Hirata, Hiromasa; Kawanami, Takao; and Omura, Yasuhiro, 4,269,052, Cl. 72-39.000.
Tanaka, Masaya; Ono, Mitsuo; and Degawa, Sadao, 4,270,049, Cl. 250-227.000.
Ishizaka, Sunao; Araki, Yoshitaka; and Muryoi, Takeshi, to Nippon Kogaku K.K. Lens barrel for both priorities or shutter speed priority mode automatic exposure system. 4,269,497, Cl. 354-286.000.
Ishizawa, Shizuo: *See*—
Kunii, Kazuya; Tsutsumi, Saburo; and Ishizawa, Shizuo, 4,269,153, Cl. 123-308.000.
Ishizawa, Yoshiyuki: *See*—
Endoh, Kenjiro; Ishizawa, Yoshiyuki; Tanaka, Masanori; and Iwasaki, Koji, 4,270,177, Cl. 364-571.000.
Isolite Babcock Refractories Co., Ltd.: *See*—
Sonobe, Kazuo; and Kato, Takeo, 4,269,887, Cl. 428-280.000.
Italtel S.p.A.: *See*—
Sbuelz, Anes, 4,268,957, Cl. 29-871.000.
Ito, Masazumi; Shibazaki, Kenji; and Kitagawa, Tsuneo, to Minolta Camera Kabushiki Kaisha. Trouble detecting system for electrophotographic copying machine. 4,269,500, Cl. 355-14.00C.
Ito, Nobuyoshi; Morishita, Hiroshi; Morita, Minoru; and Fukano, Takashi, to Nippon Sanso Kabushiki Kaisha. Heat insulated tank. 4,269,323, Cl. 220-423.000.
Ito, Ryoichi: *See*—
Takeda, Yutaka; Aiki, Kunio; and Ito, Ryoichi, 4,270,134, Cl. 357-19.000.
Itoh, Ayao, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for measuring a pulmonary function. 4,269,195, Cl. 128-723.000.
Itoh, Osamu: *See*—
Nishizawa, Kazunori; Shirose, Toshihiro; and Itoh, Osamu, 4,269,188, Cl. 128-287.000.
ITT Industries, Inc.: *See*—
Flamm, Peter M.; and Miskin, Leslie, 4,270,139, Cl. 358-23.000.
Thiel, Rudolf, 4,269,290, Cl. 188-72.300.
Weiler, Rolf, 4,269,110, Cl. 91-369.00B.
Ivandick, Mark J.: *See*—
Ivandick, Tony J.; and Ivandick, Mark J., 4,269,353, Cl. 239-77.000.
Ivandick, Tony J.; and Ivandick, Mark J. Exhaust operated vaporizer. 4,269,353, Cl. 239-77.000.
Ivankovics, Steven G.: *See*—
Van Arman, William L.; Kambs, Russell A.; Ivankovics, Steven G.; Hansen, Frederick W.; and Julow, Thomas M., 4,268,945, Cl. 29-407.000.
Ivanov, Vasily T.: *See*—
Unigovsky, Mikhail R.; Rulevsky, Evgeny V.; Arendt, Georgy A.; Chirskov, Vladimir G.; Konovalov, Julian K.; Ivanov, Vasily T.; Nemirovsky, Isaak Y.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; and Kheinis, Alexandr B., 4,269,552, Cl. 409-140.000.
Ives, Frank E. Method for producing a curable, filled resin composition, e.g., artificial marble. 4,269,798, Cl. 264-73.000.
Ives, Jeffrey L.: *See*—
Watt, David S.; and Ives, Jeffrey L., 4,269,837, Cl. 424-246.000.
Iwamoto, Masahiro. Toothpaste extruder capable of controlling the supply amount. 4,269,238, Cl. 141-362.000.
Iwasaki, Koji: *See*—
Endoh, Kenjiro; Ishizawa, Yoshiyuki; Tanaka, Masanori; and Iwasaki, Koji, 4,270,177, Cl. 364-571.000.
Iwata, Shizuo: *See*—
Ogawa, Koichi; Terasawa, Masatoshi; Iwata, Shizuo; Suzuki, Yoshihisa; and Tanakamaru, Hideki, 4,269,860, Cl. 426-5.000.
Iwata, Toshiharu; Hattori, Tadashi; Mukainakano, Siniti; Goto, Kenji; and Sawada, Daisaku, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Ignition timing control system for internal combustion engines. 4,269,154, Cl. 123-425.000.
Iwata, Toshiharu; Hattori, Tadashi; Mukainakano, Siniti; Goto, Kenji; and Sawada, Daisaku, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Ignition timing control system for internal combustion engines. 4,269,155, Cl. 123-425.000.
J. H. Fenner & Co. Limited: *See*—
Fryatt, Leslie A., 4,269,305, Cl. 198-781.000.
J. Muller S.A.: *See*—
Muller, Alfred; and Muller, Jean-Paul, 4,268,961, Cl. 30-191.000.
Jablonski, Richard J.: *See*—
Zamek, Otto S.; Pauze, Denis R.; and Jablonski, Richard J., 4,269,752, Cl. 260-31.40R.
Jackson, Lewis B. Well pipe handling equipment. 4,269,554, Cl. 414-22.000.
Jackson, William L.: *See*—
Harrington, Wilfred H.; and Jackson, William L., 4,269,251, Cl. 152-362.00R.
Jagenberg Werke Aktiengesellschaft: *See*—
Martini, Norbert, 4,269,556, Cl. 414-50.000.
Janssens, Wilhelmus; Somers, Alphonse; and Claeys, Daniel A., to AGFA-GEVAERT N.V. Photographic material suited for the production of multicolor images by means of diffusion transfer of complexed silver halide. 4,269,924, Cl. 430-214.000.
Jansson, Erik O.; Naucler, Bengt O.; and Asberg, Thomas, to Aktiebolaget Karlstads Mekaniska Werkstad. Stay ring for the spiral casing of a rotary hydraulic machine. 4,269,568, Cl. 415-204.000.
Japan Tower Miller Co., Ltd.: *See*—
Kawabata, Shigekatsu, 4,269,808, Cl. 423-1.000.
Jarl, Stig: *See*—
Fredell, Soren; and Jarl, Stig, 4,269,079, Cl. 74-365.000.
Jarvenkyla, Juhani; and Yli-Kovero, Tapio. Fastening means for skis. 4,269,435, Cl. 280-814.000.
Jennings, Francis W., to Merck & Co., Inc. Compositions and methods for the treatment of chronic trypanosomiasis infections. 4,269,830, Cl. 424-226.000.
Jensen, William S., to Barry Wright Corporation. Stacked, resilient isolator components. 4,269,400, Cl. 267-153.000.
Jessop, Thomas C., to Eastman Kodak Company. Slide transfer mechanism. 4,269,803, Cl. 422-63.000.
Jeyes Group Limited: *See*—
Barford, Eric D.; Gray, Robin A.; and Saul, Michael R., 4,269,723, Cl. 252-106.000.
Jezbera, Val K., to Dataproducts Corporation. Print hammer assembly method. 4,269,118, Cl. 101-93.340.
Jezuit, Arthur D.; and Geu, Edwin J., to Hooper, Inc. Silverware dryer. 4,268,973, Cl. 34-69.000.
Jindra, Clifford P.; and Atherton, James H., to RCA Corporation. Small signal memory system with reference signal. 4,270,190, Cl. 365-208.000.
Johansson, Thomas, to Kemanord AB. Process for the preparation of silicon or ferrosilicon. 4,269,620, Cl. 75-11.000.
Johnson, Clarence, Jr. II. 2 in 1 Bobber super and regular. 4,268,988, Cl. 43-43.110.
Johnson Controls, Inc.: *See*—
Matthews, Russell B., 4,269,589, Cl. 431-46.000.
Johnson, Donald C.; and Burdorf, Walter L., to Ludlow Corporation. Anti-static mats and carpets. 4,269,881, Cl. 428-95.000.
Johnson, Doyle F.; and Goetz, Nelson F., to Tri State Culvert Corporation. High strength pipe. 4,269,234, Cl. 138-121.000.
Johnson, Howard L.: *See*—
De Graw, Joseph I.; Lawson, John A.; Johnson, Howard L.; and Loew, Gilda H., 4,269,843, Cl. 424-260.000.
Johnson, Julius T.; and Johnson, Robert R. On-line sampler. 4,269,064, Cl. 73-422.0TC.
Johnson, Mark; and Ulrich, Reinhard, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Apparatus for measuring the influence of physical parameters on the length of a path. 4,269,506, Cl. 356-5.000.
Johnson, Marvin M.: *See*—
Holland, Eric O.; and Johnson, Marvin M., 4,269,694, Cl. 208-48.00R.
Johnson, Michael R.: *See*—
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,270,005, Cl. 568-328.000.
Johnson, Richard I., to Xerox Corporation. Pretreatment of substrates prior to thin film deposition. 4,269,137, Cl. 118-50.100.
Johnson, Robert R.: *See*—
Johnson, Julius T.; and Johnson, Robert R., 4,269,064, Cl. 73-422.0TC.
Johnson, Steven A. Focusing reflector solar energy collector apparatus and method. 4,269,168, Cl. 126-424.000.
Johnson, Terry J. Cartridge type sauce extruder. 4,269,330, Cl. 222-386.000.
Johnston, David B. R.: *See*—
Christensen, Burton G.; Johnston, David B. R.; and Schmitt, Susan M., 4,269,873, Cl. 424-274.000.
Johnston, Max M.: *See*—
Durham, Samuel; and Johnston, Max M., 4,269,325, Cl. 221-194.000.
Johnston, Samuel J. B.: *See*—
Soby, William; and Johnston, Samuel J. B., 4,269,669, Cl. 204-5.000.
Jones, Addison B.: *See*—
Elliott, Michael T.; Splinter, Michael R.; Jones, Addison B.; and Reekstin, John P., 4,268,951, Cl. 29-571.000.

Jones, Robert J.; Green, Howard E.; and Quinlivan, Sandra C., to TRW, Inc. Low temperature curable compliant bismaleimide compositions. 4,269,961, Cl. 526-262.000.

Joshi, David; and Klingaman, Richard, to Colgate-Palmolive Company. Bottled particulate detergent. 4,269,722, Cl. 252-90.000.

Jossin, Alain: *See—*
Farge, Daniel; Jossin, Alain; Ponsinet, Gerard; and Reisdorf, Daniel, 4,269,842, Cl. 424-258.000.

Julier, Robert M.: *See—*
Marriott, Robert C.; Kristal, Frank W.; and Julier, Robert M., 4,269,749, Cl. 260-29.6MQ.

Julow, Thomas M.: *See—*
Van Arman, William L.; Kambs, Russell A.; Ivankovics, Steven G.; Hansen, Frederick W.; and Julow, Thomas M., 4,268,945, Cl. 29-407.000.

Juriev, Valery P.: *See—*
Tolstikov, Genrikh A.; Dzhemilev, Usein M.; Rutman, Grigory I.; Michurov, Jury I.; Pantukh, Boris I.; Shavanov, Stanislav S.; Rafikov, Sagid R.; Egoricheva, Sofia A.; Juriev, Valery P.; Liakumovich, Alexandr G.; Sobolev, Valerian M.; Korotkevich, Boris S.; Shmuk, Jury A.; and Mandelshtamm, Elena Y., 4,270,016, Cl. 585-366.000.

Kaartinen, Niilo. Procedure and apparatus for manipulating batches of liquids. 4,269,212, Cl. 137-13.000.

Kabushiki Kaisha Daini Seikosha: *See—*
Kondo, Kenichi, 4,269,025, Cl. 368-73.000.
Terade, Kiichi; and Iida, Yasuhiro, 4,270,066, Cl. 310-258.000.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See—*
Kondo, Tatsunori; and Kitagawa, Hiroshi, 4,269,102, Cl. 84-1.010.

Kabushiki Kaisha Kayaku Kosei Bushitsu Kenkyujo: *See—*
Matsuda, Yoshiji; Tamura, Keiji; Motoki, Hiroaki; Kitame, Fumio; and Ishida, Nakao, 4,269,765, Cl. 260-112.00B.

Kabushiki Kaisha Saikin Kagaku Kenkyujo: *See—*
Matsuda, Yoshiji; Tamura, Keiji; Motoki, Hiroaki; Kitame, Fumio; and Ishida, Nakao, 4,269,765, Cl. 260-112.00B.

Kabushiki Kaisha Shikutani: *See—*
Shikutani, Michio; and Akiyama, Satoshi, 4,269,571, Cl. 417-234.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Kudo, Yasuhiko, 4,270,192, Cl. 368-29.000.

Kabushikikaisha Ohkawara Seisakusho: *See—*
Ohtani, Shigemori; and Tanno, Shoji, 4,269,358, Cl. 239-425.000.

Kado, Satoshi: *See—*
Ikeno, Teruo; Kado, Satoshi; Ayusawa, Saburo; Kawasaki, Hironobu; and Watanabe, Takashi, 4,269,904, Cl. 428-623.000.

Kajitani, Koichi: *See—*
Maruyama, Hitoshi; Kajitani, Koichi; and Shiraishi, Makoto, 4,269,729, Cl. 252-316.000.

Kalal, Jaroslav; Bednar, Bohumil; Zachoval, Jaromir; Petr, Jiri; Pelcbauer, Zdenek; and Svec, Frantisek, to Ceskoslovenska akademie ved. Electron resist. 4,269,962, Cl. 526-273.000.

Kalbitz, Angela: *See—*
Rabenstein, Heinrich; Kalbitz, Angela; and Kleber, Karl H., 4,269,912, Cl. 429-225.000.

Kalfoglou, George, to Texaco Inc. Sulfomethylated lignosulfonates as additives in oil recovery processes involving chemical recovery agents. 4,269,270, Cl. 166-273.000.

Kambs, Russell A.: *See—*
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Kamei, Kuniaki: *See—*
Arai, Eisuke; Kamei, Kuniaki; Kawasaki, Akio; Takagi, Fumio; Shirai, Koichi; and Orihara, Yasuharu, 4,269,650, Cl. 156-540.000.

Kamimura, Toshio, to Teijin Seiki Company Limited. Hydraulic apparatus. 4,269,111, Cl. 91-419.000.

Kamimura, Yasushi. Wide-angle optical door viewer. 4,269,474, Cl. 350-69.000.

Kaminsky, Vadim A.: *See—*
Zhestkov, Vladimir M.; Tsypin, Vladimir M.; Grzhebin, Mikhail Z.; Kaminsky, Vadim A.; and Mazepov, Vitaly G., 4,269,599, Cl. 440-88.000.

Kamiya, Osamu, to Brother Kogyo Kabushiki Kaisha. Trimming device for sewing machines. 4,269,127, Cl. 112-122.000.

Kando, Yasuhiko: *See—*
Shibuya, Yoshimichi; Kawamura, Hiromitsu; Kando, Yasuhiko; and Koyama, Masaharu, 4,269,617, Cl. 65-43.000.

Kaneko, Katsumi: *See—*
Okumura, Yoshiharu; and Kaneko, Katsumi, 4,270,011, Cl. 568-899.000.

Kang, Kenneth S.; Veeder, George T.; and Mirrasoul, Peter J., to Merck & Co., Inc. Preparation of heteropolysaccharide S-119. 4,269,939, Cl. 435-104.000.

Kao Soap Co., Ltd.: *See—*
Nishizawa, Kazunori; Shirose, Toshihiro; and Itoh, Osamu, 4,269,188, Cl. 128-287.000.
Sakurai, Akira; Tsuchiya, Yoshimi; and Mizutani, Hiroshi, 4,269,187, Cl. 128-263.000.

Kapadia, Jayant K.: *See—*
Rush, Donald L.; and Kapadia, Jayant K., 4,269,377, Cl. 246-182.00B.

Kar, Arup K.: *See—*
Ashpole, Raymond S.; Peachey, Colin J.; and Kar, Arup K., 4,269,024, Cl. 57-232.000.

Karashima, Masashi. Refrigerated show case. 4,269,037, Cl. 62-256.000.

Karlin, Richard A.; and Koskinen, Carl J., to Sun Electric Corporation. Remote site engine test techniques. 4,270,174, Cl. 364-551.000.

Kaspar, Vaclav: *See—*
Molls, Hans-Heinz; Kaspar, Vaclav; and Moutsokapas, Asterios, 4,268,972, Cl. 34-60.000.

Kastening, Bertel: *See—*
Faul, Wolfgang; Kastening, Bertel; and Luft, Harald, 4,269,678, Cl. 204-129.600.

Kasuga, Muneo: *See—*
Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, 4,269,502, Cl. 355-35.00H.

Katayama, Kouichi: *See—*
Yukimachi, Katsurou; and Katayama, Kouichi, 4,269,263, Cl. 165-29.000.

Kato, Hajime; Satomura, Masato; and Sato, Kozo, to Fuji Photo Film Co., Ltd. Recording material containing a novel color developer. 4,269,893, Cl. 428-341.000.

Kato, Takeo: *See—*
Sonobe, Kazuo; and Kato, Takeo, 4,269,887, Cl. 428-280.000.

Kaufman, Kurt D., to Thomas C. Elder, Inc. 8-Aminoalkyl-4-alkylpsoralens. 4,269,851, Cl. 424-279.000.

Kaufman, Kurt D., to Thomas C. Elder, Inc. 4'-Substituted-4,5',8-trialkylpsoralens. 4,269,852, Cl. 424-279.000.

Kawabata, Shigekatsu, to Seika Sangyo Co., Ltd.; and Japan Tower Miller Co., Ltd. Method of simultaneously subjecting ores to pulverization and leaching or extraction. 4,269,808, Cl. 423-1.000.

Kawai Musical Instrument Mfg. Co., Ltd: *See—*
Deutsch, Ralph; and Deutsch, Leslie J., 4,269,101, Cl. 84-1.010.

Kawai, Syuji: *See—*
Yamashita, Shuzo; Kawai, Syuji; Tanii, Hirokuni; and Takakura, Koichi, 4,269,713, Cl. 210-500.200.

Kawai, Tsuneo: *See—*
Noto, Koichi; and Kawai, Tsuneo, 4,268,999, Cl. 51-165.720.

Kawamoto, Toshiaki: *See—*
Shimazawa, Yoichi; and Kawamoto, Toshiaki, 4,270,133, Cl. 346-140.00R.

Kawamura, Hiromitsu: *See—*
Shibuya, Yoshimichi; Kawamura, Hiromitsu; Kando, Yasuhiko; and Koyama, Masaharu, 4,269,617, Cl. 65-43.000.

Kawanami, Takao: *See—*
Imai, Isao; Hirata, Hiromasa; Kawanami, Takao; and Omura, Yasuhiro, 4,269,052, Cl. 72-39.000.

Kawasaki, Akio: *See—*
Arai, Eisuke; Kamei, Kuniaki; Kawasaki, Akio; Takagi, Fumio; Shirai, Koichi; and Orihara, Yasuharu, 4,269,650, Cl. 156-540.000.

Kawasaki, Hironobu: *See—*
Ikeno, Teruo; Kado, Satoshi; Ayusawa, Saburo; Kawasaki, Hironobu; and Watanabe, Takashi, 4,269,904, Cl. 428-623.000.

Kawasaki, Kishio: *See—*
Kishino, Takao; Kawasaki, Kishio; and Yamaguchi, Nobuo, 4,270,068, Cl. 313-497.000.

Kawasaki Steel Corporation: *See—*
Ohzu, Hideshi; Ohmori, Hisashi; Maeda, Mizuo; and Ohtani, Hiromi, 4,269,257, Cl. 164-86.000.

Kawashima, Akira: *See—*
Yamagishi, Michio; Kawashima, Akira; Mizutani, Taku; Hara, Hiroshi; Mizoue, Kazutoshi; Omura, Sadafumi; Seto, Haruo; and Otake, Noboru, 4,269,971, Cl. 536-17.00R.

Kay, Joel B. Pencils and pencil caps. 4,269,523, Cl. 401-51.000.

Keasling, Hugh H., to Shell Oil Company. Certain 7-(β-phenyl-β-hydroxyethylaminopropyl)-theophyllines as lipolysis promoters. 4,269,840, Cl. 424-253.000.

Keasling, Hugh H., to Shell Oil Company. Certain 7-(phenethylaminoalkyl)theophylline derivatives as lipolysis promoters. 4,269,841, Cl. 424-253.000.

Keene, James S. Hook assembly for engaging a spinal column. 4,269,178, Cl. 128-69.000.

Keil, Howard R.; and Daigle, Oscar L., to Kerr-McGee Chemical Corporation. Ilmenite beneficiation process and a digester method. 4,269,619, Cl. 75-1.00T.

Kelbel, Donald W., to Borg-Warner Corporation. Automatic clutch. 4,269,294, Cl. 192-54.000.

Keller, Terry M. Plant-watering device. 4,269,329, Cl. 222-333.000.

Kelman, Charles D. Intraocular lenses. 4,268,921, Cl. 3-13.000.

Kemanord AB: *See—*
Johansson, Thomas, 4,269,620, Cl. 75-11.000.

Kempton, Alan G.: *See—*
McCready, Ronald G. L.; Coleman, Richard D.; Capes, Charles E.; Kempton, Alan G.; and Moneib, Nayera A. M., 4,269,699, Cl. 75-101.00R.

Kennett, John E. Apparatus for cleaning the wheel arches of vehicles. 4,269,141, Cl. 118-708.000.

Kenworthy, Max H.; and Textoris, Melvin A., to GF Business Equipment, Inc. Partition wiring system. 4,270,020, Cl. 174-48.000.

Keogh, Raymond W.: *See—*
Orr, Thomas S. C.; and Keogh, Raymond W., 4,269,853, Cl. 424-283.000.

Kerley, Bernard J., Jr. Recovery of precious metals from difficult ores. 4,269,622, Cl. 75-103.000.

Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
Faul, Wolfgang; Kastening, Bertel; and Luft, Harald, 4,269,678, Cl. 204-129.600.
Zimmermann, Ulrich; and Pilwat, Gunter, 4,269,826, Cl. 424-101.000.

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Keil, Howard R.; and Daigle, Oscar L., 4,269,619, Cl. 75-1.00T.

Kethley, Lancelot I. Continuous recording of vapor pressure. 4,269,060, Cl. 73-29.000.

Keunecke, Gerhard; and Krimphove, Herbert, to Davy Powergas GmbH. Jet pump exhaust recycle in production of phthalic anhydride. 4,269,776, Cl. 260-346.400.

Keuper, John J.: *See—*
Glandorf, Frank J.; Wagner, Paul D.; and Keuper, John J., 4,270,064, Cl. 310-90.000.

Kheinis, Alexandr B.: *See—*
Unigovsky, Mikhail R.; Rulevsky, Evgeny V.; Arendt, Georgy A.; Chirskov, Vladimir G.; Konovalov, Julian K.; Ivanov, Vasily T.; Nemirovsky, Isaak Y.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; and Kheinis, Alexandr B., 4,269,552, Cl. 409-140.000.

Kidd, Arthur H., to H. G. Weber & Co., Inc. Automatic bag collating and stacking apparatus. 4,269,557, Cl. 414-105.000.

Kienzle Uhrenfabriken GmbH: *See—*
Stechmann, Helmut; and Haberer, Jens, 4,270,200, Cl. 368-252.000.

Kii, Masami, to Mitsubishi Denki Kabushiki Kaisha. Puffer type circuit interrupter. 4,270,034, Cl. 200-148.00R.

Kilian, Lars E.: *See—*
Olsson, Curt S.; Widerstrom, Olle; and Kilian, Lars E., 4,269,458, Cl. 308-9.000.

Killgoar, Paul C., Jr.: *See—*
Tabar, Ronald J.; and Killgoar, Paul C., Jr., 4,269,746, Cl. 260-23.70H.

Kilmister, George T. F.: *See—*
Clarke, Robin; Thomas, Douglas J.; Kilmister, George T. F.; and Beal, Robert R., 4,269,051, Cl. 72-9.000.

Kim, Bumman: *See—*
Dakss, Mark L.; Kim, Bumman; and Schlafer, John, 4,269,648, Cl. 156-293.000.

Kim, Chang J.: *See—*
Grenoble, Dane C.; Kim, Chang J.; and Murrell, Lawrence L., 4,269,737, Cl. 252-464.000.

Kimoto, Kazuo: *See—*
Ishikawa, Muneharu; and Kimoto, Kazuo, 4,269,714, Cl. 210-627.000.

Kimura, Muneaki: *See—*
Fukuoka, Masayuki; Arakawa, Tatsumi; Kimura, Muneaki; Masukawa, Yukihisa; and Kobayashi, Hidehiko, 4,269,911, Cl. 429-199.000.

King, Randall N.; and Mitoff, Stephan P., to Electric Power Research Institute. Sodium-sulfur cell with method of constructing the sulfur electrode. 4,269,909, Cl. 429-104.000.

King, Russell W. Radioactive gas dose computer. 4,270,052, Cl. 250-432.0PD.

Kinoshita, Makoto: *See—*
Ebata, Yoshihiro; Toibana, Yasuo; Uetsuki, Tsuneo; Kose, Saburo; and Kinoshita, Makoto, 4,269,641, Cl. 156-89.000.

Kinoshita, Takao: *See—*
Suzuki, Ryoichi; Kinoshita, Takao; Ogawa, Yukio; and Uchiyama, Takashi, 4,269,493, Cl. 354-51.000.

Kinsella, Phillip W., to Schurman Machine Works, Inc. Rotary chipping head. 4,269,244, Cl. 144-218.000.

Kirino, Osamu; Hashimoto, Shunichi; Matsumoto, Hiroshi; and Oshio, Hiromichi, to Sumitomo Chemical Company, Limited. N-(Phenylcycloalkyl)acetamide derivatives, and their production and use. 4,270,002, Cl. 564-221.000.

Kish, Arthur S., to Murray Corporation. Torque transmitting fluid couplings. 4,269,295, Cl. 192-58.00B.

Kishino, Takao; Kawasaki, Kishio; and Yamaguchi, Nobuo, to Futaba Denshi Kogyo K.K. Fluorescent display device. 4,270,068, Cl. 313-497.000.

Kita, Yuzo: *See—*
Hagiwara, Yoshimune; Sawase, Terumi; Takai, Atsushi; Kita, Yuzo; and Honda, Akira, 4,270,220, Cl. 455-182.000.

Kitagawa, Hiroshi: *See—*
Kondo, Tatsunori; and Kitagawa, Hiroshi, 4,269,102, Cl. 84-1.010.

Kitagawa, Masamichi, to Konishiroku Photo Industry Co., Ltd. Symmetrical objective. 4,269,477, Cl. 350-464.000.

Kitagawa, Tsuneo: *See—*
Ito, Masazumi; Shibazaki, Kenji; and Kitagawa, Tsuneo, 4,269,500, Cl. 355-14.00C.

Kitame, Fumio: *See—*
Matsuda, Yoshiji; Tamura, Keiji; Motoki, Hiroaki; Kitame, Fumio; and Ishida, Nakao, 4,269,765, Cl. 260-112.00B.

Kitamura Valve Seizo Kabushiki Kaisha: *See—*
Saito, Tutomu; Yamazoe, Hiroshi; and Yamaoka, Hidenori, 4,269,391, Cl. 251-315.000.

Kitzing, Rainer: *See—*
Mason, Leslie F. A.; Kitzing, Rainer; Whitear, Brian R. D.; Long, William E.; Wood, Glenn P.; and Reeves, David L. R., 4,269,928, Cl. 430-239.000.

Kiwala, Jacob: *See—*
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,269,862, Cl. 426-536.000.

Kizu, Ryohei; Matoba, Taketo; Oguni, Yasuo; and Sakurai, Hideaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Coupling for resiliently connecting two shafts for transmission of torque. 4,269,043, Cl. 64-11.00R.

Klasema, Hendrik; and Prince, Hendrikus A., to Prince, Hendrikus Andreas. Method and device for forming a flange on a tubular element of a synthetic resin. 4,269,801, Cl. 264-156.000.

Kleber, Karl H.: *See—*
Rabenstein, Heinrich; Kalbitz, Angela; and Kleber, Karl H., 4,269,912, Cl. 429-225.000.

Kleiner, Frank: *See—*
Freitag, Dieter; Nouvertne, Werner; Burkhardt, Claus; and Kleiner, Frank, 4,269,964, Cl. 528-126.000.

Kleingartner, Charles A.: *See—*
Nelson, Harold K.; Kleingartner, Charles A.; and Vetsch, LeRoy E., 4,269,070, Cl. 73-779.000.

Klingaman, Richard: *See—*
Joshi, David; and Klingaman, Richard, 4,269,722, Cl. 252-90.000.

Klockner-Humboldt-Deutz AG: *See—*
Strobel, Gerhard, 4,269,019, Cl. 56-192.000.

Klotz, Marvin R., to Standard Oil Company (Indiana). Crystalline borosilicate and process of preparation. 4,269,813, Cl. 423-277.000.

Kluczkowski, Marek: *See—*
Libus, Wlodzimierz; Kluczkowski, Marek; Pilarczyk, Michal; Strzelecki, Henryk; Pastewski, Roman; and Grzybkowski, Waclaw, 4,269,676, Cl. 204-107.000.

Kmonk, Stanley; Cadwell, Dennis J.; and Ferlan, Stephen J., to Westinghouse Electric Corp. Top nozzle for a nuclear reactor fuel assembly. 4,269,661, Cl. 176-50.000.

Knapp, Charles A.; and Rao, V. Durga N., to Ford Motor Company. Elastic mounting structure for ceramic regenerator core. 4,269,262, Cl. 165-8.000.

Knifton, John F., to Texaco Inc. Manufacture of ethylene from synthesis gas (D75,673-C1). 4,270,015, Cl. 585-324.000.

Knight, Richard A.: *See—*
Babu, Suresh P.; and Knight, Richard A., 4,269,692, Cl. 208-8.0LE.

Knoll, William P. Heater unit and container. 4,269,591, Cl. 431-312.000.

Kobayashi, Hidehiko: *See—*
Fukuoka, Masayuki; Arakawa, Tatsumi; Kimura, Muneaki; Masukawa, Yukihisa; and Kobayashi, Hidehiko, 4,269,911, Cl. 429-199.000.

Kobayashi, Yuko: *See—*
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Kobe, Inc.: *See—*
Erickson, John W., 4,269,872, Cl. 427-239.000.

Kockums Industri Aktiebolag: *See—*
Fornell, Erik G.; and Eklund, Hans G. U., 4,269,245, Cl. 144-245.00A.

Koehler, Robert J.; and Bayliss, John A., to Intel Corporation. Apparatus and method for cooperative and concurrent coprocessing of digital information. 4,270,167, Cl. 364-200.000.

Koenig, Horst: *See—*
May, Hans-Joachim; and Koenig, Horst, 4,269,990, Cl. 548-315.000.

Koenuma, Masao, to Asahi Seimitsu Kabushiki Kaisha. Universal parallel ruler including scale setting device. 4,268,969, Cl. 33-438.000.

Koering, Dale J. Electroplating apparatus. 4,269,208, Cl. 134-60.000.

Koga, Isao: *See—*
Ohtake, Nobumasa; Koga, Isao; and Terui, Yohji, 4,269,993, Cl. 556-450.000.

Koga, Keiichiro: *See—*
Morokawa, Shigeru; Sekiya, Fukuo; Hashimoto, Yukio; Nomura, Yasushi; and Koga, Keiichiro, 4,270,194, Cl. 368-73.000.

Kohaut, Gunter: *See—*
Borchert, Herbert; Albert, Walter; Kohaut, Gunter; Schulte, Ulrich; and Rapp, Bruno, 4,269,895, Cl. 428-402.000.

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Karlin, Richard A.; and Koskinen, Carl J., 4,270,174, Cl. 364-551.000.
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Kountz, Kenneth J.; Cooper, Kenneth W.; and Abendschein, Frederic H., to Borg-Warner Corporation. Microcomputer control for supplemental heating in a heat pump. 4,269,261, Cl. 165-2.000.
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Kozinski, Richard R. Conduit bender construction. 4,269,056, Cl. 72-459.000.
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Neuenfeldt, Walter; Siegert, Heiner; and Zeitzschel, Gunter, 4,269,660, Cl. 176-30.000.
Kralowetz, Bruno. Method of machining crankshafts. 4,269,551, Cl. 409-132.000.
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Thomas, Dennis R., 4,269,560, Cl. 414-459.000.
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Kring, Elbert V., to Du Pont de Nemours, E. I., and Company. Self-contained gaseous contaminant dosimeter. 4,269,804, Cl. 422-86.000.
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Marriott, Robert C.; Kristal, Frank W.; and Julier, Robert M., 4,269,749, Cl. 260-29.6MQ.
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Brunold, Andreas; Kroetzsch, Peter; and Diehl, Lothar, 4,269,609, Cl. 55-71.000.
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Kronos Inc.: *See—*
Baxter, Larry K.; Cohen, Robert D.; Ain, Mark S.; and Apsell, Sheldon P., 4,270,043, Cl. 235-419.000.
Krueger, Hans; Schauer, Alois; and Walter, Karl-Heinz, to Siemens Aktiengesellschaft. Process and apparatus for displaying an image in front of an optical contrasting background. 4,269,480, Cl. 350-355.000.
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Sudo, Hisashi, 4,269,218, Cl. 137-240.000.
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Kummerle, Kurt: *See—*
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Kunii, Kazuya; Tsutsumi, Saburo; and Ishizawa, Shizuo, to Nissan Motor Company, Limited. Internal combustion engine with fuel injector. 4,269,153, Cl. 123-308.000.
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Maruyama, Hitoshi; Kajitani, Koichi; and Shiraishi, Makoto, 4,269,729, Cl. 252-316.000.
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Osa, Tetsuo; Fujihira, Masamichi; Matsue, Tomokazu; and Yamauchi, Takashi, 4,269,674, Cl. 204-81.000.
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Dearing, Le Roy M., 4,269,495, Cl. 354-106.000.
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Lang, Edward J.; and Dubenitz, Michael G., to Hooker Chemicals & Plastics Corp. Phenolic resin particles and processes for their production and friction elements containing same. 4,269,754, Cl. 260-33.60R.
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Veldman, Donald R., 4,269,464, Cl. 339-95.00R.
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LaRose, Claude; and Gagnon, Jacques, to Triangle Accessoires de Motocyclettes Ltee. Motorcycle luggage rack. 4,269,335, Cl. 224-31.000.
Larrow, Kenneth. House assembly with prefabricated elements. 4,269,006, Cl. 52-79.100.
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Larson, Eugene R.; and Harms, Walter, to Textron Inc. Fastener and driver assembly. 4,269,246, Cl. 81-460.000.
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Patel, Ramesh N.; Hou, Ching-Tsang; and Laskin, Allen I., 4,269,940, Cl. 435-148.000.
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Le, Be V. Underwater breathing device for a swimmer. 4,269,182, Cl. 128-201.110.
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Lim, John; Huang, Warren; and Brady, Michael, to Filtrol Corporation. Method of exchanging sodium zeolite. 4,269,815, Cl. 423-328.000.
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Strahm, Christian; and Gageur, Fritz, 4,269,046, Cl. 68-13.00R.
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Lombardi, Paolo; Franceschi, Giovanni; and Arcamone, Federico, to Farmitalia Carlo Erba. Total synthesis of 7-oxo-4-thia-1-azabicyclo-[3,2,0]-heptane-2-carboxyl derivatives useful as β-lactamase inhibitors and antibacterial agents. 4,269,771, Cl. 260-245.20R.

Lonati, Francesco, to Costruzioni Meccaniche Lonati S.p.A. Circular knitting machine. 4,269,044, Cl. 66-56.000.

Long, Kelso M.; Pharr, Leonard; and Pharr, Earl J., to Burner Systems International, Inc. Device for punching holes in tubing. 4,269,094, Cl. 83-188.000.

Long, William E.: *See—*
Mason, Leslie F. A.; Kitzing, Rainer; Whitear, Brian R. D.; Long, William E.; Wood, Glenn P.; and Reeves, David L. R., 4,269,928, Cl. 430-239.000.

Longrod, Scott J., to SCM Corporation. Key mechanism having a snap action. 4,269,521, Cl. 400-472.000.

Loskot, John E. Heat engine. 4,269,031, Cl. 60-669.000.

Lossing, Wallace W.: *See—*
Burton, Charles V.; and Lossing, Wallace W., 4,269,179, Cl. 128-75.000.

Lotte Co. Ltd.: *See—*
Ogawa, Koichi; Terasawa, Masatoshi; Iwata, Shizuo; Suzuki, Yoshihisa; and Tanakamaru, Hideki, 4,269,860, Cl. 426-5.000.

Loudon, Robert: *See—*
Butterworth, Donald J.; Halbfoster, Christopher; and Loudon, Robert, 4,269,707, Cl. 210-777.000.

Lovelace, Donald E.: *See—*
Saarem, Myrl J.; Lovelace, Donald E.; Firebaugh, Dale C.; and Soukup, Dale F., 4,269,229, Cl. 137-869.000.

Loveless, James C.; and Palmer, Darrel R., to Deseret Company, The. Intravenous needle assembly with air bleed plug. 4,269,186, Cl. 128-214.400.

Lu, Chin H.; and Erhardt, Peter F., to Xerox Corporation. Positive toners containing long chain hydrazinium compounds. 4,269,922, Cl. 430-126.000.

Lubbers, Dietrich W.; and Optiz, Norbert, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Optode. 4,269,516, Cl. 356-427.000.

Lucas Industries Limited: *See—*
Buckle, Allan S., 4,270,159, Cl. 361-79.000.
Holt, William D., 4,270,057, Cl. 307-10.0BP.
Seilly, Alec H., 4,269,361, Cl. 239-585.000.
Seilly, Alec H.; and Sonderskov, Rasmus J., 4,269,388, Cl. 251-138.000.
Skinner, Robert T. J., 4,269,159, Cl. 123-569.000.

Ludlow Corporation: *See—*
Johnson, Donald C.; and Burdorf, Walter L., 4,269,881, Cl. 428-95.000.

Luft, Harald: *See—*
Faul, Wolfgang; Kastening, Bertel; and Luft, Harald, 4,269,678, Cl. 204-129.600.

Lundberg, Bror. Stop mechanism for radial arm saw. 4,269,095, Cl. 83-391.000.

Lundgren, Gordon L.: *See—*
Guch, Steve, Jr.; and Lundgren, Gordon L., 4,270,095, Cl. 331-94.50L.

Lynch, Gregory A.: *See—*
Noyes, Ronald T.; Lynch, Gregory A.; and Williams, Eugene E., 4,268,971, Cl. 34-34.000.

MacDavid, Kenneth R., to Harris Corporation. Threshold generator. 4,270,208, Cl. 375-76.000.

Machida, Toshio: *See—*
Hatsuno, Hiroshi; Machida, Toshio; Fukushima, Mitsuo; and Ogawa, Shinji, 4,269,061, Cl. 73-40.000.

Mack, Gerry, to Argus Chemical Corporation. Antimony mercaptocarboxylic acid ester stabilizers for polyvinyl chloride resin compositions and process. 4,269,731, Cl. 252-400.00R.

Mack Trucks, Inc.: *See—*
Meacock, Leslie A., II; and Merkel, Edward C., 4,269,282, Cl. 180-328.000.

Macke, Gerald F.: *See—*
Holub, Fred F.; and Macke, Gerald F., 4,269,755, Cl. 260-37.0PC.

Mackelburg, Gerald R.; McCracken, Howard B.; and McCardell, Peter D., to United States of America, Navy. Adaptive slant range compensator for a remote optical mapping system. 4,270,142, Cl. 358-99.000.

MacKenzie, Colin R.: *See—*
Strandell, Per O.; Thorslund, Erik M.; MacKenzie, Colin R.; and Smith, Norman, 4,268,948, Cl. 29-527.600.

Mackey, Joseph E.: *See—*
DellaVecchia, Michael P.; Mackey, Joseph E.; and Steinberg, Albert H., 4,269,884, Cl. 428-131.000.

MacLean, Barry L.; and Grube, William L., to MacLean-Fogg Company. Fastener with flexible flange. 4,269,248, Cl. 411-186.000.

MacLean-Fogg Company: *See—*
MacLean, Barry L.; and Grube, William L., 4,269,248, Cl. 411-186.000.

Maddox, Jim, Jr.: *See—*
Shupe, Russell D.; and Maddox, Jim, Jr., 4,269,271, Cl. 166-274.000.

Maeda, Haruo; and Kobayashi, Yuko, to Olympus Optical Co., Ltd. Constant-speed scanning lens system. 4,269,478, Cl. 350-465.000.

Maeda, Hidetoshi: *See—*
Sasaki, Takehiko; and Maeda, Hidetoshi, 4,270,199, Cl. 368-224.000.

Maeda, Miwako: *See—*
Yamashita, Nobuo; and Maeda, Miwako, 4,269,485, Cl. 350-469.000.

Maeda, Mizuo: *See—*
Ohzu, Hideshi; Ohmori, Hisashi; Maeda, Mizuo; and Ohtani, Hiromi, 4,269,257, Cl. 164-86.000.

Magill, D. Thomas: *See—*
Sifford, Bruce M.; and Magill, D. Thomas, 4,270,179, Cl. 364-724.000.

Mahieu, Jean-Rene: *See—*
Blondel, Jacques; and Mahieu, Jean-Rene, 4,270,224, Cl. 455-327.000.

Mahn, John E. Laminated material and method of forming. 4,269,885, Cl. 428-216.000.

Major, Jeffrey T., to Eltra Corporation. Four pole wave wound direct current machine with multi-turn armature coils. 4,270,065, Cl. 310-207.000.

Makimoto, Tsutomu: *See—*
Yano, Makoto; Shimada, Kiyoo; Shibatani, Kyoichiro; and Makimoto, Tsutomu, 4,269,682, Cl. 204-195.00M.

Makino Milling Machine Co., Ltd.: *See—*
Sato, Makoto, 4,268,949, Cl. 29-568.000.

Malhotra, Girish K.: *See—*
Carr, Richard P.; Nanda, Ashok K.; Schneider, Charles A.; and Malhotra, Girish K., 4,269,987, Cl. 548-257.000.

Manabe, Toshikatsu: *See—*
Nonogaki, Saburo; Morishita, Hajime; Uchino, Shoichi; and Manabe, Toshikatsu, 4,269,918, Cl. 430-28.000.

Manalastas, Pacifico V.: *See—*
Wagensommer, Joseph; and Manalastas, Pacifico V., 4,269,955, Cl. 526-185.000.

Mandelshtamm, Elena Y.: *See—*
Tolstikov, Genrikh A.; Dzhemilev, Usein M.; Rutman, Grigory I.; Michurov, Jury I.; Pantukh, Boris I.; Shavanov, Stanislav S.; Rafikov, Sagid R.; Egoricheva, Sofia A.; Juriev, Valery P.; Liakumovich, Alexandr G.; Sobolev, Valerian M.; Korotkevich, Boris S.; Shmuk, Jury A.; and Mandelshtamm, Elena Y., 4,270,016, Cl. 585-366.000.

Mann, Joseph K., to Varian Associates, Inc. Apparatus and method for measuring pressures and indicating leaks with optical analysis. 4,270,091, Cl. 324-462.000.

Manukov, Erik A.: *See—*
Agladze, Rafael I.; Manukov, Erik A.; and Agladze, Georgy R., 4,269,689, Cl. 204-268.000.

Maples, James A.; and Pepper, Robert B. Position sensing and indicating device. 4,270,171, Cl. 364-480.000.

Marantz, Daniel R.: *See—*
Altorfer, Kenneth J.; and Marantz, Daniel R., 4,269,867, Cl. 427-37.000.

Marckx, Michel L.: *See—*
Verkinderen, Paul A.; Verhoeven, Ludovicus H.; Christiaen, Lucien A.; Pira, Camille F.; and Marckx, Michel L., 4,269,647, Cl. 156-157.000.

Marechal, Pierre-Georges: *See—*
Le Tron, Yves; Obregon, Juan; Marechal, Pierre-Georges; and Barvet, Serge, 4,270,097, Cl. 331-96.000.

Marks, George R., to Sierra Designs, Inc. Arch supported tent. 4,269,210, Cl. 135-1.00R.

Marple, Elwood, to W. L. Burke, Inc. Sewage treatment system. 4,268,925, Cl. 4-449.000.

Marriott, Robert C.; Kristal, Frank W.; and Julier, Robert M., to Dow Chemical Company, The. Method of imparting salt and/or mechanical stability to aqueous polymer microsuspensions. 4,269,749, Cl. 260-29.6MQ.

Marsh, Gunnar; and Olander, Christer B., to Landstingens Inkopscentral, Lic, ekonomisk forening. Prefabricatable, artificial lower leg. 4,268,922, Cl. 3-21.000.

Marshall Electronics, Inc.: *See—*
Richman, Stephan S., 4,269,058, Cl. 73-4.00R.

Marston, Robert K., to Rockwell International Corporation. Signal normalizer. 4,270,223, Cl. 455-305.000.

Martin, Henry: *See—*
Szczepanski, Henry; Martin, Henry; Fory, Werner; and Pissiotas, Georg, 4,269,775, Cl. 260-340.700.

Martin, James H. Tennis training device. 4,269,410, Cl. 273-29.00A.

Martin, Jerry R.: *See—*
Tadanier, John S.; and Martin, Jerry R., 4,269,970, Cl. 536-17.00R.

Martin, John K., III: *See—*
Whitney, Douglass G.; and Martin, John K., III, 4,269,185, Cl. 128-214.00F.

Martin, William B., to Garrett Corporation, The. Engine accessory disconnect. 4,269,293, Cl. 192-35.000.

Martincic, Paul W.; and Greene, Charles E., to Westinghouse Electric Corp. Bus bar adaptor for window type current transformers. 4,270,110, Cl. 336-174.000.

Martinez, Pasquale: *See*—
Cavallino, Francesco; Martinez, Pasquale; Allione, Michele; and Schiavuzzi, Roberto, 4,269,029, Cl. 60-293.000.
Martini, Norbert, to Jagenberg Werke Aktiengesellschaft. Stack changing apparatus. 4,269,556, Cl. 414-50.000.
Maruyama, Hiromi: *See*—
Ichimiya, Yoshichika; Sudo, Tsuneta; Maruyama. Hiromi; Sugamori, Shigeru; Sumida, Susumu; Shimizu, Masao; and Wakita, Toshiaki, 4,270,116, Cl. 340-146.200.
Maruyama, Hitoshi; Kajitani, Koichi; and Shiraishi, Makoto, to Kuraray Co., Ltd. Microencapsulation process and resulting microcapsules. 4,269,729, Cl. 252-316.000.
Maruyama, Tsuneo: *See*—
Mine, Katsutoshi; Maruyama, Tsuneo; and Takeshita, Kazuhide, 4,269,753, Cl. 260-33.4SB.
Mine, Katsutoshi; Maruyama, Tsuneo; and Takeshita, Kazuhide, 4,269,757, Cl. 260-37.0SB.
Masco Corporation: *See*—
Baker, William, 4,270,217, Cl. 455-165.000.
Mashiki, Nobuo; and Chigusa, Koichi, to Aisin Seiki Kabushiki Kaisha. Spacer. 4,269,533, Cl. 403-410.000.
Mason, Leslie F. A.; Kitzing, Rainer; Whitear, Brian R. D.; Long, William E.; Wood, Glenn P.; and Reeves, David L. R., to Ciba-Geigy Aktiengesellschaft. Process for the production of photographic images by dye diffusion transfer and photographic material suitable in this process. 4,269,928, Cl. 430-239.000.
Massabo, Vincenzo: *See*—
Moiso, Ugo; Massabo, Vincenzo; and Domenis, Danilo, 4,269,769, Cl. 260-176.000.
Massachusetts General Hospital, The: *See*—
Burton, James A.; and Haber, Edgar, 4,269,827, Cl. 424-177.000.
Massachusetts Institute of Technology: *See*—
Glicksman, Leon R.; and Rohsenow, Warren R., 4,269,796, Cl. 261-112.000.
Massey, Emmett B. Variably weighted vest. 4,268,917, Cl. 2-102.000.
Masters, Joseph I.; and Goldberg, Gershon M., to Ionomet Company, Inc. Process of doping silver image in chalcogenide layer. 4,269,935, Cl. 430-323.000.
Masukawa, Yukihisa: *See*—
Fukuoka, Masayuki; Arakawa, Tatsumi; Kimura, Muneaki; Masukawa, Yukihisa; and Kobayashi, Hidehiko, 4,269,911, Cl. 429-199.000.
Matibet, Annie B.: *See*—
Bayssat, Michel; Sautel, Francis; Depin, Jean-Claude; and Matibet, Annie B., 4,269,848, Cl. 424-275.000.
Matoba, Taketo: *See*—
Kizu, Ryohei; Matoba, Taketo; Oguni, Yasuo; and Sakurai, Hideaki, 4,269,043, Cl. 64-11.00R.
Matrix Unlimited, Inc.: *See*—
Kress, David R., 4,269,930, Cl. 430-270.000.
Matsuda, Yoshiji; Tamura, Keiji; Motoki, Hiroaki; Kitame, Fumio; and Ishida, Nakao, to Kabushiki Kaisha Saikin Kagaku Kenkyujo; and Kabushiki Kaisha Kayaku Kosei Bushitsu Kenkyujo. Immune serum for diagnosis of cancer and preparation thereof. 4,269,765, Cl. 260-112.00B.
Matsue, Tomokazu: *See*—
Osa, Tetsuo; Fujihira, Masamichi; Matsue, Tomokazu; and Yamauchi, Takashi, 4,269,674, Cl. 204-81.000.
Matsumoto, Hiroshi: *See*—
Kirino, Osamu; Hashimoto, Shunichi; Matsumoto, Hiroshi; and Oshio, Hiromichi, 4,270,002, Cl. 564-221.000.
Matsumoto, Mitsuo: *See*—
Kuroda, Toshimasa; and Matsumoto, Mitsuo, 4,268,940, Cl. 28-255.000.
Matsumoto, Tadao: *See*—
Ejima, Shozo; Tomioka, Susumu; Matsumoto, Tadao; and Hane, Naruaki, 4,269,888, Cl. 428-296.000.
Matsumoto, Yoichi, to Metallgesellschaft Aktiengesellschaft. Electrostatic precipitator with supplemental means for catching dust released from the main collector plates. 4,269,610, Cl. 55-112.000.
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; and Tanaka, Haruo, to Nippon Shinyaku Co. Ltd. Carbamyl piperazine derivatives. 4,269,838, Cl. 424-250.000.
Matsuo, Kazumasa, to Olympus Optical Co., Ltd. Stabbing apparatus for diagnosis of living body. 4,269,192, Cl. 128-665.000.
Matsuo, Tadayuki: *See*—
Yano, Makoto; Shimada, Kiyoo; Shibatani, Kyoichiro; and Makimoto, Tsutomu, 4,269,682, Cl. 204-195.00M.
Matsushita Electric Industrial Co. Ltd.: *See*—
Terada, Jiro; Nitta, Tsuneharu; and Ise, Yukihiko, 4,270,085, Cl. 324-65.00R.
Matsuura, Shigeo: *See*—
Murata, Toshinori; and Matsuura, Shigeo, 4,270,215, Cl. 455-158.000.
Murata, Toshinori; and Matsuura, Shigeo, 4,270,219, Cl. 455-179.000.
Matsuyama, Takashi: *See*—
Tsuda, Hiroshi; Miyashita, Kiyoshi; and Matsuyama, Takashi, 4,269,407, Cl. 271-127.000.
Matsuzawa, Hideo: *See*—
Yoshioka, Teruhiko; Matsuzawa, Hideo; Okada, Kazuya; and Ikeda, Minoru, 4,269,705, Cl. 562-600.000.
Matthews, Russell B., to Johnson Controls, Inc. Solid state ignition control. 4,269,589, Cl. 431-46.000.
Mattingly, John A.; and Mehta, Hasmukh S., to Binkley Company, The. Standing seam roof, panel therefor, and method of installation. 4,269,012, Cl. 52-394.000.
Mattson, George B.; and Woodhouse, Geoffrey D., to Garrett Corporation, The. Gas turbine engine idle control and method. 4,269,027, Cl. 60-39.040.
Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See*—
Johnson, Mark; and Ulrich, Reinhard, 4,269,506, Cl. 356-5.000.
Lubbers, Dietrich W.; and Optiz, Norbert, 4,269,516, Cl. 356-427.000.
Schneider-Muntau, Hans-Jorg; and Hackbarth, Klaus, 4,270,112, Cl. 336-197.000.
Maxcap, Inc.: *See*—
Virog, John J., Jr.; and Von Hagel, Leo, 4,269,320, Cl. 215-252.000.
May, Hans-Joachim; and Koenig, Horst, to BASF Aktiengesellschaft. 1-Acyl-2-imidazolines and their manufacture. 4,269,990, Cl. 548-315.000.
Mayer, Herbert E., to Censor Patent-und Versuchs-Anstalt. Device for the projection printing of the masks of a mask set onto a semiconductor substrate. 4,269,505, Cl. 355-62.000.
Mayer, Wolfgang: *See*—
Breitling, Rolf; Mayer, Wolfgang; and Labatzke, Wolfgang, 4,269,890, Cl. 428-320.000.
Mayse, Weldon D.: *See*—
Watson, Frederick D.; Mayse, Weldon D.; and Franse, Albert D., 4,269,681, Cl. 204-188.000.
Mazepov, Vitaly G.: *See*—
Zhestkov, Vladimir M.; Tsypin, Vladimir M.; Grzhebin, Mikhail Z.; Kaminsky, Vadim A.; and Mazepov, Vitaly G., 4,269,599, Cl. 440-88.000.
McArthur, William H. Building structure and integral solar energy collecting apparatus. 4,269,171, Cl. 126-429.000.
McAuliffe, Donald C.: *See*—
Robertson, King G.; and McAuliffe, Donald C., 4,269,632, Cl. 148-2.000.
McCardell, Peter D.: *See*—
Mackelburg, Gerald R.; McCracken, Howard B.; and McCardell, Peter D., 4,270,142, Cl. 358-99.000.
McCarthy, Michael D. Dog leash. 4,269,150, Cl. 119-109.000.
McCollough, John D. Pen with articulate handle. 4,269,529, Cl. 401-258.000.
McCormick, Mathew, to Bowthorpe-Hellermann Limited. Panel-fixing cable tie. 4,269,379, Cl. 248-73.000.
McCracken, Howard B.: *See*—
Mackelburg, Gerald R.; McCracken, Howard B.; and McCardell, Peter D., 4,270,142, Cl. 358-99.000.
McCready, Ronald G. L.; Coleman, Richard D.; Capes, Charles E.; Kempton, Alan G.; and Moneib, Nayera A. M., to Canadian Patents & Dev. Ltd. Bioadsorption alteration of iron sulfide surfaces. 4,269,699, Cl. 75-101.00R.
McDorman, Robert L. Door locking system. 4,269,048, Cl. 70-13.000.
McDowell, Charles J.: *See*—
Ong, Kwok Y.; Packard, Michael T.; and McDowell, Charles J., 4,269,057, Cl. 73-1.00G.
McEwen, Gerald K.: *See*—
Atchison, George J.; McEwen, Gerald K.; and Stevens, Violete L., 4,269,727, Cl. 252-188.30R.
McFadyen, Robert J.: *See*—
Gawler, Glenn B.; and McFadyen, Robert J., 4,270,102, Cl. 331-115.000.
McFee, Richard. Water distiller. 4,269,663, Cl. 202-185.00B.
McIntire, Floyd C.: *See*—
Patterson, Roy; and McIntire, Floyd C., 4,269,764, Cl. 260-112.00R.
McIntosh, James D.: *See*—
Wrotny, Walter A.; and McIntosh, James D., 4,269,165, Cl. 126-191.000.
McIntyre, Melville D., to Boeing Company, The. Gyroscope closed-loop speed controller. 4,269,073, Cl. 74-5.700.
McLean, William B. Tire chains and a tool for applying them to a tire. 4,269,249, Cl. 152-213.00A.
McMillen, David L.: *See*—
Gordon, Goss E.; and McMillen, David L., 4,269,116, Cl. 100-99.000.
McMullan, James P.; and Stevens, Albert. Heater with reinforcing strate. 4,270,040, Cl. 219-528.000.
McNeilabs, Inc.: *See*—
Parker, Dawood, 4,269,685, Cl. 204-195.00P.
Meacock, Leslie A., II; and Merkel, Edward C., to Mack Trucks, Inc. Gear shift control. 4,269,282, Cl. 180-328.000.
Mead Corporation, The: *See*—
Hwang, Ki-Sup, 4,269,627, Cl. 106-22.000.
Meal, John R.; and Sandmore, Donald K., to Western Electric Company, Inc. Method and apparatus for manufacturing boxed encapsulated capacitors. 4,268,942, Cl. 29-25.420.
Medical Dynamics, Inc.: *See*—
Adair, Edwin L., 4,269,174, Cl. 128-1.00R.
Medney, Jonas. Pre-insulated pipe system. 4,269,436, Cl. 285-47.000.
Medtronic, Inc.: *See*—
Stokes, Kenneth B., 4,269,198, Cl. 128-785.000.
Meginnis, George B.; and Spees, John A., to General Motors Corporation. Waffle pattern porous material. 4,269,032, Cl. 60-754.000.
Mehta, Hasmukh S.: *See*—
Mattingly, John A.; and Mehta, Hasmukh S., 4,269,012, Cl. 52-394.000.

Meinan Machinery Works, Inc.: *See*—
Hasegawa, Katsuji, 4,269,243, Cl. 144-213.000.
Hasegawa, Katsuji, 4,269,883, Cl. 428-120.000.

Melachouris, Nicholas: *See*—
Chirafisi, Dominick J.; and Melachouris, Nicholas, 4,269,864, Cl. 426-583.000.

Melikian, Robert B. Writing instrument with retractable tip. 4,269,525, Cl. 401-108.000.

Melillo, David G.; and Ryan, Kenneth M., to Merck & Co., Inc. Synthesis of thienamycin via trans-3-carboxymethylene-4-carboxy-5-methyl-Δ^2-isoxazoline. 4,269,772, Cl. 260-245.20T.

Mella, Mario. Pasta-making machine. 4,269,582, Cl. 425-190.000.

Mellinger, Gerald A., to Combustion Engineering, Inc. Pulverizer rejects disposal. 4,269,125, Cl. 110-171.000.

Melvin, Lawrence S., Jr.: *See*—
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,270,005, Cl. 568-328.000.

Menant, Christophe, to Thomson-CSF. Radio-frequency head having a self-adaptive dynamic range. 4,270,222, Cl. 455-236.000.

Menzel, S. W. O.; Mock, Donald E.; Mominee, David E.; Vance, Gilbert W.; and Zauner, Dale P., to RIS Irrigation Systems. Continuous drip irrigation tube. 4,269,357, Cl. 239-272.000.

Merck & Co., Inc.: *See*—
Christensen, Burton G.; Johnston, David B. R.; and Schmitt, Susan M., 4,269,873, Cl. 424-274.000.
Jennings, Francis W., 4,269,830, Cl. 424-226.000.
Kang, Kenneth S.; Veeder, George T.; and Mirrasoul, Peter J., 4,269,939, Cl. 435-104.000.
Melillo, David G.; and Ryan, Kenneth M., 4,269,772, Cl. 260-245.20T.
Wintersdorff, Peter, 4,269,974, Cl. 536-114.000.

Meredith, William N. E.: *See*—
Ballard, Denis G. H.; Meredith, William N. E.; and Rideal, Graham R., 4,269,628, Cl. 106-86.000.

Merrill, Vernon F., to National Instrument Co. Tray indexing apparatus. 4,269,298, Cl. 198-341.000.

Merkel, Edward C.: *See*—
Meacock, Leslie A., II; and Merkel, Edward C., 4,269,282, Cl. 180-328.000.

Merten, Rudolf: *See*—
Lewalter, Jurgen; Rottmaier, Ludwig; Merten, Rudolf; Zecher, Wilfried; Dunwald, Willi; and Schulte, Bernhard, 4,269,750, Cl. 260-30.200.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See*—
Haux, Ulrich; and Voigt, Werner, 4,269,376, Cl. 244-117.00R.

Metacon AG: *See*—
Tinnes, Bernhard; Baumann, Rainer; and Dur, Bernhard, 4,269,399, Cl. 266-236.000.

Metallgesellschaft Aktiengesellschaft: *See*—
Matsumoto, Yoichi, 4,269,610, Cl. 55-112.000.

Metrailer, William J., to Exxon Research & Engineering Company. Fluid coking and gasification process with the addition of cracking catalysts. 4,269,696, Cl. 208-120.000.

Meyer, Lloyd E., to Westinghouse Electric Corp. Electrical inductive apparatus. 4,270,111, Cl. 336-70.000.

Meyer, Robert A.; and Bretl, Richard A., to Modine Manufacturing Company. Tubular heat exchanger with turbulator. 4,269,265, Cl. 165-109.00T.

Michaud, Honore. Tree-felling lever. 4,269,393, Cl. 254-104.000.

Michel, Walter H.: *See*—
Goldman, Jerome L.; Breeden, John O. 'R.; and Michel, Walter H., 4,269,543, Cl. 405-198.000.

Michurov, Jury I.: *See*—
Tolstikov, Genrikh A.; Dzhemilev, Usein M.; Rutman, Grigory I.; Michurov, Jury I.; Pantukh, Boris I.; Shavanov, Stanislav S.; Rafikov, Sagid R.; Egoricheva, Sofia A.; Juriev, Valery P.; Liakumovich, Alexandr G.; Sobolev, Valerian M.; Korotkevich, Boris S.; Shmuk, Jury A.; and Mandelshtamm, Elena Y., 4,270,016, Cl. 585-366.000.

Midling, Robert L.: *See*—
Robinson, Robert L.; Hoff, David C.; and Midling, Robert L., 4,270,183, Cl. 364-900.000.

Miille, Gerard J., to GTE Automatic Electric Laboratories Incorporated. Apparatus for forcing a phase-lock oscillator to a predetermined frequency when unlocked. 4,270,093, Cl. 331-17.000.

Mikiya, Toshio; Mogaki, Tadahisa; and Nozawa, Nobuyuki, to Nikki Co., Ltd. Bubble generator. 4,269,797, Cl. 261-122.000.

Miko, Richard J.; and Shapiro, Daniel H., to Edo Corporation. Reusable disc filter with foil spacers for high temperature gases. 4,269,613, Cl. 55-278.000.

Miles, Anthony W.: *See*—
Dall, Desmond M.; and Miles, Anthony W., 4,269,180, Cl. 128-92.00B.

Miller, David: *See*—
Rose, Carl J.; and Miller, David, 4,270,004, Cl. 568-314.000.

Miller, Donald E., to Goodyear Tire & Rubber Company, The. Method for the production of low melting ring alkylated diphenyl-paraphenylenediamines. 4,269,763, Cl. 260-45.9QB.

Miller, Harvey R. Combined road vehicle and aircraft. 4,269,374, Cl. 244-2.000.

Miller, James C.: *See*—
Bechtiger, Charles G.; and Miller, James C., 4,269,050, Cl. 70-272.000.

Miller, John E.: *See*—
Schall, Wayne E.; Miller, John E.; and Gabriel, John F., 4,268,975, Cl. 34-105.000.

Miller, Rickie L.; and Walters, Noel E., to Goodyear Tire & Rubber Company, The. Method of making a belted tire. 4,269,646, Cl. 156-128.00N.

Mills, Benjamin G.: *See*—
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Milner, John A.; and Turner, Roger M., to Imperial Chemical Industries Limited. Ore treatment process. 4,269,702, Cl. 209-166.000.

Milton Roy Company: *See*—
Goode, Chester L., 4,269,573, Cl. 417-362.000.

Minagawa, Nobuhiko, to Fuji Photo Film Co., Ltd. Recording sheet for ink jet recording. 4,269,891, Cl. 428-335.000.

Minami, Takehiro; and Shigekusa, Hisashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Coil winding machine. 4,269,367, Cl. 242-7.080.

Mine, Katsutoshi; Maruyama, Tsuneo; and Takeshita, Kazuhide, to Toray Silicone Company, Ltd. Siloxane compositions which can be ceramified at high temperatures. 4,269,753, Cl. 260-33.4SB.

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Mineral Industries Engineers, Inc.: *See*—
del Rio, Salvador M., 4,269,449, Cl. 299-2.000.

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Shackleton, Charles E. E., deceased; Shackleton, Edward A. B., executor; Wickens, Anthony J.; and Turner, John H. W., 4,269,816, Cl. 423-498.000.

Ministry of International Trade and Industry: *See*—
Ebata, Yoshihiro; Toibana, Yasuo; Uetsuki, Tsuneo; Kose, Saburo; and Kinoshita, Makoto, 4,269,641, Cl. 156-89.000.
Ichimura, Kunihiro, 4,269,941, Cl. 435-182.000.

Minnesota Mining and Manufacturing Company: *See*—
Cook, Jack E., 4,268,983, Cl. 40-2.200.
Larson, Curtis L., 4,269,322, Cl. 220-94.00R.

Minnich, George E., to Singer Company, The. Method and apparatus to extend the bandwidth of buffeting in flight simulators. 4,268,979, Cl. 434-46.000.

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Ito, Masazumi; Shibazaki, Kenji; and Kitagawa, Tsuneo, 4,269,500, Cl. 355-14.00C.
Wada, Kenichi; Oka, Tateki; Tanaka, Susumu; and Tabuchi, Kenji, 4,269,920, Cl. 430-107.000.

Minowa, Yoshiki, to Kubushiki Kaisha Suwa Seikosha. Analog display electronic stopwatch. 4,270,197, Cl. 368-102.000.

Mirrasoul, Peter J.: *See*—
Kang, Kenneth S.; Veeder, George T.; and Mirrasoul, Peter J., 4,269,939, Cl. 435-104.000.

Miskin, Leslie: *See*—
Flamm, Peter M.; and Miskin, Leslie, 4,270,139, Cl. 358-23.000.

Missel, Leo: *See*—
Duran, John; Missel, Leo; and Montelbano, Thomas O., 4,269,968, Cl. 528-351.000.

Mitamura, Masakazu, to Takeda Riken Kogyo Kabushikikaisha. Dual slope system A-D converter. 4,270,119, Cl. 340-347.0NT.

Mitchell Industries, Inc.: *See*—
Wrotny, Walter A.; and McIntosh, James D., 4,269,165, Cl. 126-191.000.

Mitoff, Stephan P.: *See*—
King, Randall N.; and Mitoff, Stephan P., 4,269,909, Cl. 429-104.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Ishii, Toshiaki; and Watanabe, Eiki, 4,269,286, Cl. 187-29.00R.
Kii, Masami, 4,270,034, Cl. 200-148.00R.
Nagai, Nobuo, 4,270,160, Cl. 361-132.000.

Mitsubishi Rayon Co., Ltd.: *See*—
Yoshioka, Teruhiko; Matsuzawa, Hideo; Okada, Kazuya; and Ikeda, Minoru, 4,269,705, Cl. 562-600.000.

Mitsui, Tsutomu: *See*—
Hida, Takashi; Mitsui, Tsutomu; Kuwana, Kazutaka; and Hashiride, Tadaaki, 4,269,045, Cl. 66-75.200.

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Mitzel, Wilhelm, to GAO Gesellschaft fur Automation und Organisation mbH. Separating unit for flat sheet material. 4,269,405, Cl. 271-94.000.

Miyahara, Sadayasu: *See*—
Wakimoto, Saburo; Miyahara, Sadayasu; and Hyosu, Yoshihiko, 4,269,760, Cl. 260-42.530.

Miyajima, Hidenobu: *See*—
Nakai, Kiyoshi; Miyajima, Hidenobu; and Harada, Syuji, 4,269,333, Cl. 222-484.000.

Miyashita, Kiyoshi: *See*—
Tsuda, Hiroshi; Miyashita, Kiyoshi; and Matsuyama, Takashi, 4,269,407, Cl. 271-127.000.
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Miyazaki, Kensaku: *See*—
Sawamura, Ichiro; Miyazaki, Kensaku; and Yonekubo, Ken, 4,269,517, Cl. 356-432.000.

Mizoue, Kazutoshi: *See*—
Yamagishi, Michio; Kawashima, Akira; Mizutani, Taku; Hara, Hiroshi; Mizoue, Kazutoshi; Omura, Sadafumi; Seto, Haruo; and Otake, Noboru, 4,269,971, Cl. 536-17.00R.

Mizutani, Hiroshi: *See*—
Sakurai, Akira; Tsuchiya, Yoshimi; and Mizutani, Hiroshi, 4,269,187, Cl. 128-263.000.

Mizutani, Taku: *See*—
Yamagishi, Michio; Kawashima, Akira; Mizutani, Taku; Hara, Hiroshi; Mizoue, Kazutoshi; Omura, Sadafumi; Seto, Haruo; and Otake, Noboru, 4,269,971, Cl. 536-17.00R.

Mobil Oil Corporation: *See*—
Brennan, James A.; Caesar, Philip D.; Ciric, Julius; Garwood, William E.; and Holland, Robert E., 4,269,783, Cl. 518-718.000.
Chen, Nai Y.; and Shihabi, David S., 4,269,697, Cl. 208-120.000.
Silk, Murray R.; and Cleveland, Richard T., 4,269,695, Cl. 208-111.000.

Mochizuki, Noritaka; and Hajimoto, Yoshioki, to Canon Kabushiki Kaisha. Information detecting apparatus. 4,270,047, Cl. 250-216.000.

Mock, Donald E.: *See*—
Menzel, S. W. O.; Mock, Donald E.; Mominee, David E.; Vance, Gilbert W.; and Zauner, Dale P., 4,269,357, Cl. 239-272.000.

Modine Manufacturing Company: *See*—
Meyer, Robert A.; and Bretl, Richard A., 4,269,265, Cl. 165-109.00T.

Mogaki, Tadahisa: *See*—
Mikiya, Toshio; Mogaki, Tadahisa; and Nozawa, Nobuyuki, 4,269,797, Cl. 261-122.000.

Mohacsi, Ernest, to Hoffmann-La Roche Inc. Process for preparing 3-phenoxy morphinans. 4,270,000, Cl. 564-174.000.

Mohr, Reinhard: *See*—
Neeb, Rudolf; Hohmann, Kurt; and Mohr, Reinhard, 4,269,768, Cl. 260-146.00R.

Moiso, Ugo; Massabo, Vincenzo; and Domenis, Danilo, to Aziende Colori Nazionali Affini ACNA S.p.A. Diazo compounds obtained by coupling acetoacetanilides with tetrazotized diaminobenzanilides. 4,269,769, Cl. 260-176.000.

Molenaar, Arian, to U.S. Philips Corporation. Bath for electroless depositing tin on substrates. 4,269,625, Cl. 106-1.220.

Molina, Orlando G., to Rockwell International Corporation. Ultrasonic couplant compositions and method for employing same. 4,269,068, Cl. 73-644.000.

Molinier S.A.: *See*—
Delannoy, Robert, 4,269,181, Cl. 128-156.000.

Molins Limited: *See*—
Powell, Gordon F. W.; Bolt, Reginald C.; and Simmons, Albert, 4,269,201, Cl. 131-280.000.

Molins Machine Company, Inc.: *See*—
Linn, S. Stephen, 4,269,097, Cl. 83-482.000.

Molls, Hans-Heinz; Kaspar, Vaclav; and Moutsokapas, Asterios, to Bayer Aktiengesellschaft. Thin layer contact drier. 4,268,972, Cl. 34-60.000.

Molnar, Thomas R.: *See*—
Rutenberg, Morton W.; and Molnar, Thomas R., 4,269,975, Cl. 536-114.000.

Mominee, David E.: *See*—
Menzel, S. W. O.; Mock, Donald E.; Mominee, David E.; Vance, Gilbert W.; and Zauner, Dale P., 4,269,357, Cl. 239-272.000.

Momyer, William R.; and Littauer, Ernest L., to Lockheed Missiles & Space Company, Inc. Electrochemical cell. 4,269,907, Cl. 429-67.000.

Monarch Marking Systems, Inc.: *See*—
Strausburg, Larry D., 4,269,119, Cl. 101-111.000.

Moneib, Nayera A. M.: *See*—
McCready, Ronald G. L.; Coleman, Richard D.; Capes, Charles E.; Kempton, Alan G.; and Moneib, Nayera A. M., 4,269,699, Cl. 75-101.00R.

Monsanto Company: *See*—
Van Eenam, Donald N., 4,269,951, Cl. 525-359.000.

Montelbano, Thomas O.: *See*—
Duran, John; Missel, Leo; and Montelbano, Thomas O., 4,269,968, Cl. 528-351.000.

Montgomery, Robert E.: *See*—
Pellico, Michael A.; and Montgomery, Robert E., 4,269,822, Cl. 424-50.000.

Montgomery, William W. Silicone tracheal cannula. 4,269,184, Cl. 128-207.140.

Moore, James R., to AMBAC Industries, Incorporated. Apparatus for cutting, trimming and edging vegetation and the like. 4,268,964, Cl. 30-276.000.

Moraw, Roland, to Hoechst Aktiengesellschaft. Information carrier original for zero order diffraction projection. 4,269,915, Cl. 430-11.000.

Moraw, Roland; and Schadlich, Renate, to Hoechst Aktiengesellschaft. Process for preparing an original information carrier for zero-order diffraction. 4,269,932, Cl. 430-290.000.

Morcom, William R.: *See*—
Rivoli, Anthony L.; Morcom, William R.; Nicolay, Hugh C.; and Cox, Eugene R., 4,269,636, Cl. 148-175.000.

Morgan, David A.: *See*—
Smith, Eileen; and Morgan, David A., 4,269,725, Cl. 252-174.250.

Morgan Electronics: *See*—
Theis, Peter; Buchberger, Gregory D.; and Krueger, William J., 4,270,024, Cl. 179-8.00A.

Morgen, Dennis H.: *See*—
Brolin, Stephen J.; Gottesman, Jeffrey L.; Morgen, Dennis H.; and Swanson, Kenneth H., 4,270,030, Cl. 179-175.20D.

Mori, Fumio: *See*—
Ichinose, Isao; Mori, Fumio; and Suzuki, Noboru, 4,269,321, Cl. 215-343.000.

Mori, Masaaki, to Ricoh Company, Ltd. Simultaneous multi-beam optical modulation system. 4,269,482, Cl. 350-358.000.

Mori, Yoshikatsu: *See*—
Nakai, Mamoru; Harada, Katsumasa; and Mori, Yoshikatsu, 4,269,982, Cl. 548-127.000.

Moriconi, Dario J.; and Elder, John G. Needle chopper apparatus. 4,269,364, Cl. 241-36.000.

Morimoto, Syogo: *See*—
Nakazawa, Tetsuo; Sakai, Junji; and Morimoto, Syogo, 4,269,256, Cl. 164-16.000.

Morinaga, Tsuto: *See*—
Inata, Hiroo; Ogasawara, Makoto; Morinaga, Tsuto; and Norike, Akihiro, 4,269,947, Cl. 525-10.000.

Morishita, Hajime: *See*—
Nonogaki, Saburo; Morishita, Hajime; Uchino, Shoichi; and Manabe, Toshikatsu, 4,269,918, Cl. 430-28.000.

Morishita, Hiroshi: *See*—
Ito, Nobuyoshi; Morishita, Hiroshi; Morita, Minoru; and Fukano, Takashi, 4,269,323, Cl. 220-423.000.

Morita, Minoru: *See*—
Ito, Nobuyoshi; Morishita, Hiroshi; Morita, Minoru; and Fukano, Takashi, 4,269,323, Cl. 220-423.000.

Morningstar, Marion G.; and Postel, William D., Jr., to B. F. Goodrich Company, The. Process for producing homo- or copolymers of vinyl or vinylidene halides having reduced polymer buildup in the reactor. 4,269,954, Cl. 526-62.000.

Morohashi, Yasushi; Komatsu, Yasuji; Hanyuda, Toshiaki; Takiyama, Eiichiro; Horishima, Tohei; and Sugimoto, Kenji, to Showa High-polymer Co., Ltd.; and Taisei Corporation. Method for improving surface properties of porous inorganic material by coating. 4,269,869, Cl. 427-54.100.

Morokawa, Shigeru; Sekiya, Fukuo; Hashimoto, Yukio; Nomura, Yasushi; and Koga, Keiichiro, to Citizen Watch Company Limited. Electronic alarm timepiece. 4,270,194, Cl. 368-73.000.

Morris, Edwin E., to General Electric Company. Cross-correlation video tracker and method. 4,270,143, Cl. 358-125.000.

Morse, Erwin E., to Brown Company. Cellulose floc granules and process. 4,269,859, Cl. 424-362.000.

Morton, Edward W., to Westinghouse Electric Corp. Composite base and ballast member for compact single-ended fluorescent lamp. 4,270,071, Cl. 315-62.000.

Motoki, Hiroaki: *See*—
Matsuda, Yoshiji; Tamura, Keiji; Motoki, Hiroaki; Kitame, Fumio; and Ishida, Nakao, 4,269,765, Cl. 260-112.00B.

Motoori, Ryuzo; Watanabe, Sakuji; and Ohtsubo, Yoshiaki, to Nippon Kogaku K.K. Power supply circuit for camera. 4,269,496, Cl. 354-267.000.

Motorola, Inc.: *See*—
Bafaro, Michael P., 4,270,126, Cl. 340-748.000.
Bowman, George A., 4,270,098, Cl. 331-96.000.
Falk, Terrence F.; Schultz, Terrence R.; and Hoffmann, James E., 4,270,213, Cl. 455-77.000.
Hanna, John E., 4,270,062, Cl. 307-272.00A.

Motorola Israel Limited: *See*—
Cohen, Yitzhak; Brandman, Yigal; and Eckstien, Zvi, 4,270,185, Cl. 364-900.000.

Moura, Joao B., to Duratex S.A. Process for engraving metal plates to be used as patterns for texturized products. 4,269,679, Cl. 204-129.650.

Moutsokapas, Asterios: *See*—
Molls, Hans-Heinz; Kaspar, Vaclav; and Moutsokapas, Asterios, 4,268,972, Cl. 34-60.000.

Mueller, Arthur L., to AMP Incorporated. Splice connector for aluminum wire. 4,269,465, Cl. 339-95.00R.

Mueller, Klaus W.; and Olsen, Norman R., to Stauffer Chemical Company. Dust abatement with calcium sulfate. 4,269,721, Cl. 252-88.000.

Mueller, Martin S.: *See*—
Carter, William D.; and Mueller, Martin S., 4,269,370, Cl. 242-56.00A.

Mueller, Sergio R. C., to Petroleo Brasileiro S.A. - Petrobras. Jack-up rig for marine drilling. 4,269,542, Cl. 405-196.000.

Muggli, Jurg: *See*—
Horvath, Zoltan; Muggli, Jurg; Ackermann, Hans; and Tresch, Erwin, 4,269,510, Cl. 356-338.000.

Mukainakano, Siniti: *See*—
Iwata, Toshiharu; Hattori, Tadashi; Mukainakano, Siniti; Goto, Kenji; and Sawada, Daisaku, 4,269,154, Cl. 123-425.000.
Iwata, Toshiharu; Hattori, Tadashi; Mukainakano, Siniti; Goto, Kenji; and Sawada, Daisaku, 4,269,155, Cl. 123-425.000.

Muller, Alfred; and Muller, Jean-Paul, to J. Muller S.A. Cutting device in particular pin cutting. 4,268,961, Cl. 30-191.000.

Muller, Jean-Paul: *See*—
Muller, Alfred; and Muller, Jean-Paul, 4,268,961, Cl. 30-191.000.

Muller, Peter M.; Pfister, Rudolf; and Urban, Rene, to Hoffmann-La Roche Inc. Phenyl-cyclohexadiene-alkylamine derivatives. 4,269,788, Cl. 260-501.100.

Mullins, David L.: *See*—
Litteral, Carl J.; and Mullins, David L., 4,269,992, Cl. 556-446.000.

Murase, Hidetoshi: *See*—
Watanabe, Tsuyoshi; Murase, Hidetoshi; Murayama, Akira; and Nakasugi, Mikio, 4,268,943, Cl. 29-131.000.

Murata, Toshinori; and Matsuura, Shigeo, to Hitachi, Ltd. Channel indicator. 4,270,215, Cl. 455-158.000.

Murata, Toshinori; and Matsuura, Shigeo, to Hitachi, Ltd. Channel selection apparatus tunable to destined frequency in short time. 4,270,219, Cl. 455-179.000.

Murayama, Akira: *See*—
Watanabe, Tsuyoshi; Murase, Hidetoshi; Murayama, Akira; and Nakasugi, Mikio, 4,268,943, Cl. 29-131.000.

Murphy, Richard D.; and Clelford, Douglas H., to United Technologies Corporation. Selective disablement in fail-operational, fail-safe multi-computer control system. 4,270,168, Cl. 364-200.000.

Murray Corporation: *See*—
Kish, Arthur S., 4,269,295, Cl. 192-58.00B.

Murray Ohio Manufacturing Co., The: *See*—
Peterson, James F.; Crabtree, Joe; and Coleman, Donald C., 4,269,081, Cl. 74-473.00R.

Murrell, Lawrence L.: *See*—
Grenoble, Dane C.; Kim, Chang J.; and Murrell, Lawrence L., 4,269,737, Cl. 252-464.000.

Muryoi, Takeshi: *See*—
Ishizaka, Sunao; Araki, Yoshitaka; and Muryoi, Takeshi, 4,269,497, Cl. 354-286.000.

Muskulus, Willi, to Balzer & Droll. Method and apparatus for winding a plurality of windings that are to be collected in a stator sheet packet. 4,269,235, Cl. 140-92.100.

Musser, John H.: *See*—
Huang, Fu C.; and Musser, John H., 4,269,846, Cl. 424-269.000.

Mutsaers, Cornelis A. H. A.: *See*—
Boonstra, Alexander H.; Mutsaers, Cornelis A. H. A.; and Van der Kruijs, Franciscus N. G. R., 4,269,898, Cl. 428-426.000.

N-S-W Corporation: *See*—
Dukes, Bobby W., 4,269,088, Cl. 81-57.390.

Nachtkamp, Klaus; Pedain, Josef; and Grammel, Jurgen, to Bayer Aktiengesellschaft. Process for the preparation of aqueous polyurethane dispersions and solutions. 4,269,748, Cl. 260-29.2TN.

Naffziger, Larry C., to Bank of America N.T. & S.A. Flow control device. 4,269,564, Cl. 415-53.00R.

Nagai, Nobuo, to Mitsubishi Denki Kabushiki Kaisha. Lightning resistive device in aerial power transmission system. 4,270,160, Cl. 361-132.000.

Nagano, Masashi, to Shimano Industrial Company, Limited. Rear derailleur for a bicycle. 4,269,601, Cl. 474-82.000.

Nagler, Meshulam: *See*—
Gaylord, Norman G.; and Nagler, Meshulam, 4,269,956, Cl. 526-192.000.
Gaylord, Norman G.; Nagler, Meshulam; and Fein, Marvin M., 4,269,957, Cl. 526-192.000.

Nailor, Michael T.; and Hart, Andrew J., fire damper frames. 4,269,255, Cl. 160-381.000.

Naito, Takayuki; Nakagawa, Susumu; Yamasaki, Tetsuro; Okita, Taka-aki; and Yamashita, Haruhiro, to Bristol-Myers Company. Alkylthio-adenines used as bronchodilators. 4,269,839, Cl. 424-253.000.

Naka, Kiyomi: *See*—
Suzuki, Kazuyoshi; Takahashi, Teruo; Shingu, Tadashi; Naka, Kiyomi; and Horike, Akihiro, 4,269,931, Cl. 430-271.000.

Nakagawa, Shinsuke: *See*—
Asagao, Soichi; Nakatani, Masaru; Nakagawa, Shinsuke; Takahara, Yoshiyuki; and Okada, Naoki, 4,269,814, Cl. 423-308.000.

Nakagawa, Susumu: *See*—
Naito, Takayuki; Nakagawa, Susumu; Yamasaki, Tetsuro; Okita, Taka-aki; and Yamashita, Haruhiro, 4,269,839, Cl. 424-253.000.

Nakai, Kiyoshi; Miyajima, Hidenobu; and Harada, Syuji, to Asahi Malleablt Iron, Co., Ltd.; and Nippon Light Metal Co., Ltd. Pinch valve for a closed container. 4,269,333, Cl. 222-484.000.

Nakai, Mamoru; Harada, Katsumasa; and Mori, Yoshikatsu, to Ube Industries, Ltd. Process for preparing 5-amino-1,2,3-thiadiazoles. 4,269,982, Cl. 548-127.000.

Nakamura, Kotaro: *See*—
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,269,926, Cl. 430-216.000.

Nakasugi, Mikio: *See*—
Watanabe, Tsuyoshi; Murase, Hidetoshi; Murayama, Akira; and Nakasugi, Mikio, 4,268,943, Cl. 29-131.000.

Nakatani, Masaru: *See*—
Asagao, Soichi; Nakatani, Masaru; Nakagawa, Shinsuke; Takahara, Yoshiyuki; and Okada, Naoki, 4,269,814, Cl. 423-308.000.

Nakazawa, Tetsuo; Sakai, Junji; and Morimoto, Syogo, to Hitachi, Ltd. Process for preparing mold. 4,269,256, Cl. 164-16.000.

Nakazyo, Kiyoshi: *See*—
Arai, Atsuaki; Oishi, Yasushi; Nakazyo, Kiyoshi; Sugizaki, Atsushi; and Okumura, Akio, 4,269,936, Cl. 430-389.000.

Nalco Chemical Company: *See*—
Slovinsky, Manuel, 4,269,717, Cl. 210-750.000.

Nalepka, Debra A. Disposable self-pleating drapes and method for making same. 4,269,880, Cl. 428-43.000.

Nanda, Ashok K.: *See*—
Carr, Richard P.; Nanda, Ashok K.; Schneider, Charles A.; and Malhotra, Girish K., 4,269,987, Cl. 548-257.000.

Napoli, Joseph L.: *See*—
De Luca, Hector F.; Schnoes, Heinrich K.; Napoli, Joseph L.; and Fivizzani, Mary A., 4,269,777, Cl. 260-397.100.

Narahara, Toshikazu: *See*—
Sakai, Masahiko; Toyoda, Shinichi; Narahara, Toshikazu; Hakamada, Takeshi; and Tsunoda, Tomoya, 4,269,894, Cl. 428-377.000.

Narang, Rajendra K. Wheel and tire balancing system. 4,269,451, Cl. 301-5.00B.

Nash, Lawrence H. Trialkyldithiocarbamates and method of making same. 4,269,785, Cl. 260-455.00A.

National Instrument Co.: *See*—
Mergl, Vernon F., 4,269,298, Cl. 198-341.000.

National Research Development Corporation: *See*—
Dobson, John V., 4,269,683, Cl. 204-195.00W.
Drewett, Robert J., 4,270,128, Cl. 343-702.000.
Rogers, Henry J., 4,269,850, Cl. 424-279.000.

National Starch and Chemical Corporation: *See*—
Rutenberg, Morton W.; and Molnar, Thomas R., 4,269,975, Cl. 536-114.000.

Naucler, Bengt O.: *See*—
Jansson, Erik O.; Naucler, Bengt O.; and Asberg, Thomas, 4,269,568, Cl. 415-204.000.

Nauta, Wijbe T. Copper complexes of isoquinazolines. 4,269,834, Cl. 424-245.000.

Neeb, Rudolf; Hohmann, Kurt; and Mohr, Reinhard, to Hoechst Aktiengesellschaft. Process for the preparation of chlorozincate salts of thiazolium azo dyestuffs. 4,269,768, Cl. 260-146.00R.

Neiss, Lynn R. Valve construction for pressurized flow of abrasive granular material. 4,269,359, Cl. 239-530.000.

Nelson, Harold K.; Kleingartner, Charles A.; and Vetsch, LeRoy E., to Weico Corporation. Strain/deflection sensitive variable reluctance transducer assembly. 4,269,070, Cl. 73-779.000.

Nemethy, Mike Z., to Ware, Ormond H., a part interest. Prefabricated non-precious pontic. 4,269,595, Cl. 433-191.000.

Nemirovsky, Isaak Y.: *See*—
Unigovsky, Mikhail R.; Rulevsky, Evgeny V.; Arendt, Georgy A.; Chirskov, Vladimir G.; Konovalov, Julian K.; Ivanov, Vasily T.; Nemirovsky, Isaak Y.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; and Kheinis, Alexandr B., 4,269,552, Cl. 409-140.000.

Neubert, Robert: *See*—
Sorensen, Finn L.; and Neubert, Robert, 4,268,929, Cl. 8-151.000.

Neuenfeldt, Walter; Siegert, Heiner; and Zeitzschel, Gunter, to Kraftwerk Union Aktiengesellschaft. Device for transporting radioactive material. 4,269,660, Cl. 176-30.000.

Neumann, Dennis J., to Freeman Chemical Corporation. Styrene suppressed unsaturated polyester resin compositions. 4,269,745, Cl. 260-23.00P.

Newman, Aubrey W.; Coffey, J. E.; and Whitney, Arthur D. Apparatus for plating journals of crankshafts. 4,269,686, Cl. 204-212.000.

Newman, James L.; and Lee, Harold D. Portable hydraulic rig for performing workover, drilling and other operations on a well. 4,269,395, Cl. 254-386.000.

Nicco, Adrien, to Societe Chimique des Charbonnages - CdF CHIMIE. Process and apparatus for widening the polyethylene molecular weight distribution by using two reactors and two separators. 4,269,948, Cl. 525-53.000.

Nickum, Robert H., to Cincinnnati Rotary Press Company. Rotary die cutting machine. 4,269,093, Cl. 83-174.000.

Nicolay, Hugh C.: *See*—
Rivoli, Anthony L.; Morcom, William R.; Nicolay, Hugh C.; and Cox, Eugene R., 4,269,636, Cl. 148-175.000.

Niedballa, Ulrich; and Bottcher, Irmgard, to Schering Aktiengesellschaft. Antiinflammatory-4,5-diphenyl-2-substituted-thio-imidazoles and their corresponding sulfoxides and sulfones. 4,269,847, Cl. 424-273.00R.

Nieder, Elmar: *See*—
Engelbrecht, Eckart; and Nieder, Elmar, 4,268,920, Cl. 3-1.911.

Nikki Co., Ltd.: *See*—
Mikiya, Toshio; Mogaki, Tadahisa; and Nozawa, Nobuyuki, 4,269,797, Cl. 261-122.000.

Nilsen, Arthur A.: *See*—
Caridis, Andrew A.; Benson, Clark K.; Leary, Steven G.; and Nilsen, Arthur A., 4,269,861, Cl. 426-438.000.

Nippon Carbon Co., Ltd.: *See*—
Saito, Tutomu; Yamazoe, Hiroshi; and Yamaoka, Hidenori, 4,269,391, Cl. 251-315.000.

Nippon Electric Co., Ltd.: *See*—
Hareyama, Kyuichi, 4,270,081, Cl. 323-316.000.
Hayashi, Izuo; and Furuse, Takao, 4,270,096, Cl. 331-94.50H.
Ohta, Yoshinori; Kubota, Keiichi; and Sakaguchi, Mitsuhito, 4,270,149, Cl. 358-293.000.
Tan, Yoichi; and Noda, Seiichi, 4,270,210, Cl. 375-100.000.

Nippon Kogaku K.K.: *See*—
Hagyuda, Nobuyoshi; and Tanaka, Hiroaki, 4,269,491, Cl. 354-25.000.
Ishizaka, Sunao; Araki, Yoshitaka; and Muryoi, Takeshi, 4,269,497, Cl. 354-286.000.
Motoori, Ryuzo; Watanabe, Sakuji; and Ohtsubo, Yoshiaki, 4,269,496, Cl. 354-267.000.
Suzuki, Yoshiki; and Noda, Seijiro, 4,269,498, Cl. 354-288.000.

Nippon Light Metal Co., Ltd.: *See*—
Nakai, Kiyoshi; Miyajima, Hidenobu; and Harada, Syuji, 4,269,333, Cl. 222-484.000.

Nippon Petrochemicals Co., Ltd.: *See*—
Saito, Tutomu; Yamazoe, Hiroshi; and Yamaoka, Hidenori, 4,269,391, Cl. 251-315.000.

Nippon Sanso Kabushiki Kaisha: *See*—
Ito, Nobuyoshi; Morishita, Hiroshi; Morita, Minoru; and Fukano, Takashi, 4,269,323, Cl. 220-423.000.

Nippon Shinyaku Co. Ltd.: *See*—
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; and Tanaka, Haruo, 4,269,838, Cl. 424-250.000.

Nippon Soken, Inc.: *See*—
Iwata, Toshiharu; Hattori, Tadashi; Mukainakano, Siniti; Goto, Kenji; and Sawada, Daisaku, 4,269,154, Cl. 123-425.000.

Iwata, Toshiharu; Hattori, Tadashi; Mukainakano, Siniti; Goto, Kenji; and Sawada, Daisaku, 4,269,155, Cl. 123-425.000.
Nippon Steel Corporation: *See*—
Ikeno, Teruo; Kado, Satoshi; Ayusawa, Saburo; Kawasaki, Hironobu; and Watanabe, Takashi, 4,269,904, Cl. 428-623.000.
Imai, Isao; Hirata, Hiromasa; Kawanami, Takao; and Omura, Yasuhiro, 4,269,052, Cl. 72-39.000.
Nippon Telegraph and Telephone Public Corporation: *See*—
Ichimiya, Yoshichika; Sudo, Tsuneta; Maruyama, Hiromi; Sugamori, Shigeru; Sumida, Susumu; Shimizu, Masao; and Wakita, Toshiaki, 4,270,116, Cl. 340-146.200.
Nippon Zeon Co., Ltd.: *See*—
Wada, Akira; and Davis, Bernard J., 4,269,747, Cl. 260-27.0BB.
Nira Nucleare Italiana Reattori Avanzati: *See*—
Valentini, Silvio; and Serafica, Mario, 4,269,418, Cl. 277-14.00V.
Nishida, Takashi: *See*—
Fujita, Yoshiji; Ohnishi, Takashi; and Nishida, Takashi, 4,270,003, Cl. 568-33.000.
Nishikawa, Masaji, to Olympus Optical Co., Ltd. Toner cleaning apparatus. 4,269,503, Cl. 355-15.000.
Nishikawa, Masaji: *See*—
Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, 4,269,502, Cl. 355-35.00H.
Nishimura, Taiichi: *See*—
Asanuma, Yoshimasa; and Nishimura, Taiichi, 4,269,937, Cl. 430-538.000.
Nishizawa, Jun-ichi; and Ohmi, Tadahiro, to Zaidan Hojin Handotai Kenkyu Shinkokai. Static induction transistor logic circuit. 4,270,059, Cl. 307-446.000.
Nishizawa, Kazunori; Shirose, Toshihiro; and Itoh, Osamu, to Kao Soap Co., Ltd. Disposable diaper. 4,269,188, Cl. 128-287.000.
Nissan Motor Company, Limited: *See*—
Fujishiro, Takeshi, 4,269,157, Cl. 123-478.000.
Kunii, Kazuya; Tsutsumi, Saburo; and Ishizawa, Shizuo, 4,269,153, Cl. 123-308.000.
Sasaki, Michiaki, 4,269,213, Cl. 137-38.000.
Nissen, Axel: *See*—
Heilen, Gerd; Nissen, Axel; and Woerz, Otto, 4,270,006, Cl. 568-396.000.
Nisshin Steel Co., Ltd.: *See*—
Takeuchi, Takeshi; Takamura, Hisao; Takatsu, Kiyoshi; and Shibata, Hidehiro, 4,269,633, Cl. 148-6.210.
Nitta, Tsuneharu: *See*—
Terada, Jiro; Nitta, Tsuneharu; and Ise, Yukihiko, 4,270,085, Cl. 324-65.00R.
NL Industries, Inc.: *See*—
House, Roy F., 4,269,279, Cl. 175-66.000.
Kolakowski, Michael A., 4,269,810, Cl. 423-92.000.
Striffler, Eugene, Jr.; and Kolakowski, Michael A., 4,269,811, Cl. 423-92.000.
Noda, Seiichi: *See*—
Tan, Yoichi; and Noda, Seiichi, 4,270,210, Cl. 375-100.000.
Noda, Seijiro: *See*—
Suzuki, Yoshiki; and Noda, Seijiro, 4,269,498, Cl. 354-288.000.
Nogai, Akira, to Yoshida Kogyo K.K. Injection molding machine. 4,269,588, Cl. 425-545.000.
Nomura, Hideo: *See*—
Nozawa, Katsumi; and Nomura, Hideo, 4,269,572, Cl. 417-299.000.
Nomura, Yasushi: *See*—
Morokawa, Shigeru; Sekiya, Fukuo; Hashimoto, Yukio; Nomura, Yasushi; and Koga, Keiichiro, 4,270,194, Cl. 368-73.000.
Nonogaki, Saburo; Morishita, Hajime; Uchino, Shoichi; and Manabe, Toshikatsu, to Hitachi, Ltd. Process for forming patternwise coated powder layer. 4,269,918, Cl. 430-28.000.
Norfield Corporation: *See*—
Ronayne, James F., 4,269,586, Cl. 425-407.000.
Norike, Akihiro: *See*—
Inata, Hiroo; Ogasawara, Makoto; Morinaga, Tsuto; and Norike, Akihiro, 4,269,947, Cl. 525-10.000.
Norsk Hydro a.s.: *See*—
Omdal, Bjarne, 4,269,247, Cl. 150-12.000.
Northern Telecom Limited: *See*—
Garner, John N., 4,269,023, Cl. 57-1.0UN.
Norton Company: *See*—
Notermann, Thomas M., 4,269,736, Cl. 252-455.00Z.
Norton, Richard V.; and Howe, Steven C., to Ashland Oil, Inc. Production of high energy fuel. 4,270,014, Cl. 585-22.000.
Nosler, John C. Electro-optical position-monitoring apparatus with tracking detector. 4,269,512, Cl. 356-375.000.
Notermann, Thomas M., to Norton Company. Parafin conversion catalyst. 4,269,736, Cl. 252-455.00Z.
Nothnagle, Ronald J., to Eastman Kodak Company. High contrast development of photographic elements. 4,269,929, Cl. 430-264.000.
Noto, Koichi; and Kawai, Tsuneo, to Hitachi, Ltd. Automatic polishing apparatus. 4,268,999, Cl. 51-165.720.
Nouvertne, Werner: *See*—
Freitag, Dieter; Nouvertne, Werner; Burkhardt, Claus; and Kleiner, Frank, 4,269,964, Cl. 528-126.000.
Noyes, Ronald T.; Lynch, Gregory A.; and Williams, Eugene E. Optimum low profile continuous crossflow grain drying and conditioning method and apparatus. 4,268,971, Cl. 34-34.000.
Nozawa, Katsumi; and Nomura, Hideo, to Taisan Industrial Co., Ltd. Electromagnetic plunger pump. 4,269,572, Cl. 417-299.000.
Nozawa, Nobuyuki: *See*—
Mikiya, Toshio; Mogaki, Tadahisa; and Nozawa, Nobuyuki, 4,269,797, Cl. 261-122.000.
Nygaard, Nils H., to Danfoss A/S. Motor energized by a DC voltage. 4,270,075, Cl. 318-254.000.
Nygaard, Nils H., to Danfoss A/S. Circuit for a brushless D.C. motor. 4,270,076, Cl. 318-254.000.
Obra, Bart, to Easom Engineering & Manufacturing, Corp. Motion generating mechanism. 4,269,076, Cl. 74-52.000.
Obregon, Juan: *See*—
Le Tron, Yves; Obregon, Juan; Marechal, Pierre-Georges; and Barvet, Serge, 4,270,097, Cl. 331-96.000.
Occidental Research Corporation: *See*—
White, William R., 4,269,700, Cl. 209-12.000.
Odar, Larry F., to Rego Company. Vapor flow control valve. 4,269,215, Cl. 137-75.000.
Ogasawara, Makoto: *See*—
Inata, Hiroo; Ogasawara, Makoto; Morinaga, Tsuto; and Norike, Akihiro, 4,269,947, Cl. 525-10.000.
Ogawa, Koichi; Terasawa, Masatoshi; Iwata, Shizuo; Suzuki, Yoshihisa; and Tanakamaru, Hideki, to Lotte Co. Ltd. Process for preparing a gas-developing chewing gum. 4,269,860, Cl. 426-5.000.
Ogawa, Shinji: *See*—
Hatsuno, Hiroshi; Machida, Toshio; Fukushima, Mitsuo; and Ogawa, Shinji, 4,269,061, Cl. 73-40.000.
Ogawa, Yukio: *See*—
Suzuki, Ryoichi; Kinoshita, Takao; Ogawa, Yukio; and Uchiyama, Takashi, 4,269,493, Cl. 354-51.000.
Ogihara, Masuo; Chimura, Kozo; Shinozaki, Nobuo; and Seki, Yoichi, to Seiko Koki Kabushiki Kasiha. Alarm setting indication device for digital clock. 4,270,195, Cl. 368-74.000.
Oguni, Yasuo: *See*—
Kizu, Ryohei; Matoba, Taketo; Oguni, Yasuo; and Sakurai, Hideaki, 4,269,043, Cl. 64-11.00R.
Ohishi, Michiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Optical system for imprinting information. 4,270,140, Cl. 358-55.000.
Ohkawa, Tihiro, to General Atomic Company. Mechanical compression plasma device. 4,269,658, Cl. 176-3.000.
Ohkoshi, Isao; and Ikeuchi, Hideki, to Tokyo Shibaura Denki Kabushiki Kaisha. Lifting apparatus for electrical switchboards. 4,269,285, Cl. 187-9.00R.
Ohmi, Tadahiro: *See*—
Nishizawa, Jun-ichi; and Ohmi, Tadahiro, 4,270,059, Cl. 307-446.000.
Ohmori, Hisashi: *See*—
Ohzu, Hideshi; Ohmori, Hisashi; Maeda, Mizuo; and Ohtani, Hiromi, 4,269,257, Cl. 164-86.000.
Ohmura, Kazutaka: *See*—
Inagami, Kaoru; Ohmura, Kazutaka; Haruna, Masao; and Terabayashi, Takeshi, 4,269,863, Cl. 426-550.000.
Ohnishi, Takashi: *See*—
Fujita, Yoshiji; Ohnishi, Takashi; and Nishida, Takashi, 4,270,003, Cl. 568-33.000.
Ohshima, Masami: *See*—
Koide, Fumiharu; and Ohshima, Masami, 4,269,036, Cl. 62-159.000.
Ohta, Yoshinori; Kubota, Keiichi; and Sakaguchi, Mitsuhito, to Nippon Electric Co., Ltd. Laser beam facsimile apparatus. 4,270,149, Cl. 358-293.000.
Ohtake, Nobumasa; Koga, Isao; and Terui, Yohji, to Chisso Corporation. Diaralkyldichlorosilanes. 4,269,993, Cl. 556-450.000.
Ohtani, Hiromi: *See*—
Ohzu, Hideshi; Ohmori, Hisashi; Maeda, Mizuo; and Ohtani, Hiromi, 4,269,257, Cl. 164-86.000.
Ohtani, Shigemori; and Tanno, Shoji, to Kabushikikaisha Ohkawara Seisakusho. Binary fluid burner device with burner units combined which functions as if it were a single large-capacity burner. 4,269,358, Cl. 239-425.000.
Ohtomo, Fumio: *See*—
Araki, Tatsuo; Okamoto, Yasuo; Ohtomo, Fumio; and Atsumi, Hiroto, 4,269,227, Cl. 137-630.140.
Ohtsubo, Yoshiaki: *See*—
Motoori, Ryuzo; Watanabe, Sakuji; and Ohtsubo, Yoshiaki, 4,269,496, Cl. 354-267.000.
Ohzu, Hideshi; Ohmori, Hisashi; Maeda, Mizuo; and Ohtani, Hiromi, to Kawasaki Steel Corporation. Method of sequential continuous-casting of different grades of steel. 4,269,257, Cl. 164-86.000.
Oishi, Yasushi: *See*—
Arai, Atsuaki; Oishi, Yasushi; Nakazyo, Kiyoshi; Sugizaki, Atsushi; and Okumura, Akio, 4,269,936, Cl. 430-389.000.
Oka, Mikiwo: *See*—
Tsuchiya, Tatsuhiko; and Oka, Mikiwo, 4,269,373, Cl. 242-191.000.
Oka, Tateki: *See*—
Wada, Kenichi; Oka, Tateki; Tanaka, Susumu; and Tabuchi, Kenji, 4,269,920, Cl. 430-107.000.
Okada, Kazuya: *See*—
Yoshioka, Teruhiko; Matsuzawa, Hideo; Okada, Kazuya; and Ikeda, Minoru, 4,269,705, Cl. 562-600.000.
Okada, Naoki: *See*—
Asagao, Soichi; Nakatani, Masaru; Nakagawa, Shinsuke; Takahara, Yoshiyuki; and Okada, Naoki, 4,269,814, Cl. 423-308.000.
Okajima, Shinpei, to Shimano Industrial Company, Limited. Toe clip for a bicycle pedal. 4,269,084, Cl. 74-594.600.
Okamoto, Yasuo: *See*—
Araki, Tatsuo; Okamoto, Yasuo; Ohtomo, Fumio; and Atsumi, Hiroto, 4,269,227, Cl. 137-630.140.
Oki, Takeo; and Hirosawa, Shunichi, to Pilot Man-Nen Hitsu Kabushiki Kaisha. Fountain pen with specific tubular nib. 4,269,528, Cl. 401-231.000.

Okita, Taka-aki: *See*—
Naito, Takayuki; Nakagawa, Susumu; Yamasaki, Tetsuro; Okita, Taka-aki; and Yamashita, Haruhiro, 4,269,839, Cl. 424-253.000.
Okonite Company, The: *See*—
Faranetta, John G.; and Feller, Robert G., 4,269,638, Cl. 156-53.000.
Okumura, Akio: *See*—
Arai, Atsuaki; Oishi, Yasushi; Nakazyo, Kiyoshi; Sugizaki, Atsushi; and Okumura, Akio, 4,269,936, Cl. 430-389.000.
Okumura, Yoshiharu; and Kaneko, Katsumi, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for the production of tertiary butyl alcohol. 4,270,011, Cl. 568-899.000.
Olander, Christer B.: *See*—
Marsh, Gunnar; and Olander, Christer B., 4,268,922, Cl. 3-21.000.
Olin Corporation: *See*—
Reiner, Joseph R.; and Breister, Sigmund, 4,269,621, Cl. 75-101.0BE.
Olivieri, Icaro, to Icesij A.G. Ice skating footwear. 4,268,981, Cl. 36-115.000.
Olsen, Norman R.: *See*—
Mueller, Klaus W.; and Olsen, Norman R., 4,269,721, Cl. 252-88.000.
Olshvang, Jury N.: *See*—
Galkin, Jury M.; Saulin, Albert B.; and Olshvang, Jury N., 4,270,051, Cl. 250-358.00R.
Olsson, Curt S.; Widerstrom, Olle; and Kilian, Lars E., to Waplans Mekaniska Verkstads AB. Hydrostatic bearing, especially for a rotating drum. 4,269,458, Cl. 308-9.000.
Olympus Optical Co., Ltd.: *See*—
Ida, Masatoshi, 4,270,152, Cl. 360-74.400.
Maeda, Haruo; and Kobayashi, Yuko, 4,269,478, Cl. 350-465.000.
Matsuo, Kazumasa, 4,269,192, Cl. 128-665.000.
Nishikawa, Masaji, 4,269,503, Cl. 355-15.000.
Sawamura, Ichiro; Miyazaki, Kensaku; and Yonekubo, Ken, 4,269,517, Cl. 356-432.000.
Tsuda, Hiroshi; Miyashita, Kiyoshi; and Matsuyama, Takashi, 4,269,407, Cl. 271-127.000.
Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, 4,269,502, Cl. 355-35.00H.
Yamashita, Nobuo; and Maeda, Miwako, 4,269,485, Cl. 350-469.000.
Omdal, Bjarne, to Norsk Hydro a.s. Large size sack and methods for the formation thereof. 4,269,247, Cl. 150-12.000.
Omura, Sadafumi: *See*—
Yamagishi, Michio; Kawashima, Akira; Mizutani, Taku; Hara, Hiroshi; Mizoue, Kazutoshi; Omura, Sadafumi; Seto, Haruo; and Otake, Noboru, 4,269,971, Cl. 536-17.00R.
Omura, Yasuhiro: *See*—
Imai, Isao; Hirata, Hiromasa; Kawanami, Takao; and Omura, Yasuhiro, 4,269,052, Cl. 72-39.000.
O'Neill, Raymond J. Revetment unit. 4,269,537, Cl. 405-29.000.
Ong, Kwok Y.; Packard, Michael T.; and McDowell, Charles J., to United States of America, Army. Multipurpose humidity controlled agent generator. 4,269,057, Cl. 73-1.00G.
Ono, Mitsuo: *See*—
Tanaka, Masaya; Ono, Mitsuo; and Degawa, Sadao, 4,270,049, Cl. 250-227.000.
Opelika Manufacturing Corporation: *See*—
Burton, Perry E.; and Brocklehurst, Charles E., 4,269,130, Cl. 112-262.300.
Opheij, Willem G.; and Greve, Peter F., to U.S. Philips Corporation. Apparatus for reading an optical radiation-reflecting information carrier for controlling focus. 4,270,045, Cl. 250-204.000.
Optiz, Norbert: *See*—
Lubbers, Dietrich W.; and Optiz, Norbert, 4,269,516, Cl. 356-427.000.
Orain, Michel A., to Glaenzer Spicer. Ball bearing and applications thereof. 4,269,460, Cl. 308-233.000.
Orcutt, John W., to Texas Instruments Incorporated. Proportional stroke automatic temperature control system. 4,269,351, Cl. 236-87.000.
Orihara, Yasuharu: *See*—
Arai, Eisuke; Kamei, Kuniaki; Kawasaki, Akio; Takagi, Fumio; Shirai, Koichi; and Orihara, Yasuharu, 4,269,650, Cl. 156-540.000.
Orr, Thomas S. C.; and Keogh, Raymond W., to Fisons Limited. Composition and method for treating skin mast cells and/or delayed cellular hypersensitivity reactions. 4,269,853, Cl. 424-283.000.
Osa, Tetsuo; Fujihira, Masamichi; Matsue, Tomokazu; and Yamauchi, Takashi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Method of preparing para-chlorotoluene. 4,269,674, Cl. 204-81.000.
Osaka Gas Company, Limited: *See*—
Ishikawa, Muneharu; and Kimoto, Kazuo, 4,269,714, Cl. 210-627.000.
Osaka Gas Kabushiki Kaisha: *See*—
Yukimachi, Katsurou; and Katayama, Kouichi, 4,269,263, Cl. 165-29.000.
Osborne, Robert L., to Westinghouse Electric Corp. Power plant optimization control. 4,269,030, Cl. 60-641.00R.
Oshio, Hiromichi: *See*—
Kirino, Osamu; Hashimoto, Shunichi; Matsumoto, Hiroshi; and Oshio, Hiromichi, 4,270,002, Cl. 564-221.000.
Otake, Noboru: *See*—
Yamagishi, Michio; Kawashima, Akira; Mizutani, Taku; Hara, Hiroshi; Mizoue, Kazutoshi; Omura, Sadafumi; Seto, Haruo; and Otake, Noboru, 4,269,971, Cl. 536-17.00R.
Otis Elevator Company: *See*—
Weischedel, Herbert R., 4,270,088, Cl. 324-241.000.
O'Toole, James T., to Atlantic Richfield Company. Polybutadienediol purification. 4,269,969, Cl. 528-498.000.
Ott, Helmut: *See*—
Ruchser, Erich; and Ott, Helmut, 4,269,225, Cl. 137-596.160.
Outlaw, Benjamin T.: *See*—
Redmore, Derek; and Outlaw, Benjamin T., 4,270,001, Cl. 564-186.000.
Overmeer, Robert T.: *See*—
Umans, Frans M.; Ceuppens, Willy G.; Palmans, Willy J.; and Overmeer, Robert T., 4,269,594, Cl. 432-59.000.
Owens-Corning Fiberglas Corporation: *See*—
Coffey, Fred S., 4,268,936, Cl. 19-0.560.
Eisenberg, Arnold J., 4,268,946, Cl. 29-424.000.
Rapp, Kenneth L.; and Zolnerovich, Walter, Jr., 4,269,368, Cl. 242-42.000.
Owens-Illinois, Inc.: *See*—
Schall, Wayne E.; Miller, John E.; and Gabriel, John F., 4,268,975, Cl. 34-105.000.
Ozawa, Minoru, to Adamant Kogyo Co., Ltd. Solderless capillary chips. 4,269,900, Cl. 428-542.000.
Pace Incorporated: *See*—
Siegel, William J.; Lee, Walter; and Vella, Alexander J., 4,269,343, Cl. 228-20.000.
Packard, Michael T.: *See*—
Ong, Kwok Y.; Packard, Michael T.; and McDowell, Charles J., 4,269,057, Cl. 73-1.00G.
Pallos, Ferenc M.; Brokke, Mervin E.; and Arneklev, Duane R., to Stauffer Chemical Company. Herbicide compositions. 4,269,618, Cl. 71-88.000.
Palmans, Willy J.: *See*—
Umans, Frans M.; Ceuppens, Willy G.; Palmans, Willy J.; and Overmeer, Robert T., 4,269,594, Cl. 432-59.000.
Palmer, Darrel R.: *See*—
Loveless, James C.; and Palmer, Darrel R., 4,269,186, Cl. 128-214.400.
Palti, Yoram. Constant flow device. 4,269,222, Cl. 137-391.000.
Pantukh, Boris I.: *See*—
Tolstikov, Genrikh A.; Dzhemilev, Usein M.; Rutman, Grigory I.; Michurov, Jury I.; Pantukh, Boris I.; Shavanov, Stanislav S.; Rafikov, Sagid R.; Egoricheva, Sofia A.; Juriev, Valery P.; Liakumovich, Alexandr G.; Sobolev, Valerian M.; Korotkevich, Boris S.; Shmuk, Jury A.; and Mandelshtamm, Elena Y., 4,270,016, Cl. 585-366.000.
Papas, Sophia. Bristles for an interproximal and periodontal toothbrush. 4,268,933, Cl. 15-167.00R.
Paratech Incorporated: *See*—
Roxton, George F., 4,268,926, Cl. 7-143.000.
Parker, Dawood, to McNeilabs, Inc. Disposable polarographic gas sensor system. 4,269,685, Cl. 204-195.00P.
Parker, Peter D.; Walton, Robert N.; and Walton, Lawrence J. Solar water-heating apparatus. 4,269,172, Cl. 126-450.000.
Parker, Thomas E.; and Dunnrowicz, Clarence J., to Raytheon Company. Stabilized surface wave device. 4,270,105, Cl. 333-155.000.
Parks, Howard L.; and Kuronen, John M., to Bunker Ramo Corporation. Method of fabricating an interconnection cable. 4,268,956, Cl. 29-869.000.
Parrent, Russell, to United Industrial Syndicate, Inc. Air dome with baffle for fuel pumps. 4,269,575, Cl. 417-542.000.
Pastewski, Roman: *See*—
Libus, Wlodzimierz; Kluczkowski, Marek; Pilarczyk, Michal; Strzelecki, Henryk; Pastewski, Roman; and Grzybkowski, Waclaw, 4,269,676, Cl. 204-107.000.
Pastormerlo, Primo, to Stamicarbon B.V. Treatment of urea solutions. 4,269,997, Cl. 564-73.000.
Patel, Pradeep V., to B. F. Goodrich Company, The. Extractive distillation of C-4 hydrocarbons using modified alkoxynitrile solvent. 4,269,668, Cl. 203-9.000.
Patel, Ramesh N.; Hou, Ching-Tsang; and Laskin, Allen I., to Exxon Research & Engineering Co. Microbiological alkane oxidation process. 4,269,940, Cl. 435-148.000.
Patterson, Roy; and McIntire, Floyd C. Preparation for treatment of allergic patients sensitive to ragweed pollen. 4,269,764, Cl. 260-112.00R.
Pauze, Denis R.: *See*—
Zamek, Otto S.; Pauze, Denis R.; and Jablonski, Richard J., 4,269,752, Cl. 260-31.40R.
Pazos, Jose F., to Du Pont de Nemours, E. I., and Company. Methods of developing photopolymerizable compositions containing an 0-nitroaromatic compound as photoinhibitor. 4,269,933, Cl. 430-291.000.
Peachey, Colin J.: *See*—
Ashpole, Raymond S.; Peachey, Colin J.; and Kar, Arup K., 4,269,024, Cl. 57-232.000.
Peck, Clifton S., to Chrysler Corporation. Wheel bearing slinger ring. 4,269,459, Cl. 308-36.400.
Pedain, Josef: *See*—
Nachtkamp, Klaus; Pedain, Josef; and Grammel, Jurgen, 4,269,748, Cl. 260-29.2TN.
Pedersen, Robert D.: *See*—
Collins, Arthur A.; Bayless, Jon W., Sr.; and Pedersen, Robert D., 4,270,203, Cl. 370-102.000.

Pelcbauer, Zdenek: *See—*
Kalal, Jaroslav; Bednar, Bohumil; Zachoval, Jaromir; Petr, Jiri; Pelcbauer, Zdenek; and Svec, Frantisek, 4,269,962, Cl. 526-273.000.

Pellico, Michael A.; and Montgomery, Robert E., to Laclede Professional Products, Inc. Antiseptic dentifrice. 4,269,822, Cl. 424-50.000.

Penner, Horst: *See—*
Brede, Uwe; Penner, Horst; and Zeiher, Erich, 4,269,120, Cl. 102-202.000.

Pepper, Kenneth V., to Genova, Inc. Closure member. 4,269,230, Cl. 138-89.000.

Pepper, Robert B.: *See—*
Maples, James A.; and Pepper, Robert B., 4,270,171, Cl. 364-480.000.

Perez, Hector R. Brake and wheel assembly. 4,269,423, Cl. 280-80.00R.

Perkins, Joseph K., to Ingersoll-Rand Company. Wood pulp forming system and method of recovering spent chemicals. 4,269,656, Cl. 162-30.00R.

Perretta, Michael L., to Crouse-Hinds Company. Lighting apparatus. 4,270,161, Cl. 362-249.000.

PerSci, Inc.: *See—*
Harman, Jefferson H., 4,270,073, Cl. 318-632.000.

Persidsky, Maxim D., to Institutes of Medical Sciences, The. Process and device for centrifugal separation of platelets. 4,269,718, Cl. 210-787.000.

Persson, Stig, to Aktiebolaget SKF. Seal. 4,269,420, Cl. 277-53.000.

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Peterson, James F.; Crabtree, Joe; and Coleman, Donald C., to Murray Ohio Manufacturing Co., The. Neutral positioning device for a gear shift lever. 4,269,081, Cl. 74-473.00R.

Peterson, Stephen C. Serial flow photographic washer. 4,269,209, Cl. 134-182.000.

Petitpierre, Jean C., to Ciba-Geigy Corporation. Thiazolylphthalide compounds. 4,269,978, Cl. 544-133.000.

Petr, Jiri: *See—*
Kalal, Jaroslav; Bednar, Bohumil; Zachoval, Jaromir; Petr, Jiri; Pelcbauer, Zdenek; and Svec, Frantisek, 4,269,962, Cl. 526-273.000.

Petroleo Brasileiro S.A. - Petrobras: *See—*
Mueller, Sergio R. C., 4,269,542, Cl. 405-196.000.

Petrolite Corporation: *See—*
Redmore, Derek; and Outlaw, Benjamin T., 4,270,001, Cl. 564-186.000.
Watson, Frederick D.; Mayse, Weldon D.; and Franse, Albert D., 4,269,681, Cl. 204-188.000.

Peynaud, Francois, to Thomson-CSF. Doppler current meter for use at great depths. 4,270,191, Cl. 367-91.000.

Pez, Guido; and Anderson, Lowell R., to Allied Chemical Corporation. Electrically conducting polymers. 4,269,738, Cl. 252-500.000.

Pfiffner, Albert: *See—*
Dorn, Silvia; Pfiffner, Albert; and Zurfluh, Rene, 4,270,009, Cl. 568-670.000.

Pfister, Rudolf: *See—*
Muller, Peter M.; Pfister, Rudolf; and Urban, Rene, 4,269,788, Cl. 260-501.100.

Pfizer Inc.: *See—*
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,270,005, Cl. 568-328.000.
Watt, David S.; and Ives, Jeffrey L., 4,269,837, Cl. 424-246.000.

Pharr, Earl J.: *See—*
Long, Kelso M.; Pharr, Leonard; and Pharr, Earl J., 4,269,094, Cl. 83-188.000.

Pharr, Leonard: *See—*
Long, Kelso M.; Pharr, Leonard; and Pharr, Earl J., 4,269,094, Cl. 83-188.000.

Phillips Petroleum Company: *See—*
Banasiak, Dennis S., 4,269,780, Cl. 260-405.000.
Bonazza, Benedict R.; and DeVault, Albert N., 4,269,606, Cl. 44-63.000.
Coltrin, Michael E.; and Wu, Yulin, 4,269,734, Cl. 252-430.000.
DeShon, Wallace E., 4,270,205, Cl. 371-32.000.
Holland, Eric O.; and Johnson, Marvin M., 4,269,694, Cl. 208-48.00R.
Zornes, David R., 4,269,789, Cl. 260-505.00P.

Phillips, Victor Q.; Griffin, Phil H.; and Sharki, Martin J., to Dresser Industries, Inc. Mud degasser pump. 4,269,567, Cl. 415-168.000.

Piana, Ivana, to Grafoplast S.A.S. Identification device. 4,268,986, Cl. 40-316.000.

Pickering Blackburn Limited: *See—*
Woodcock, Douglas G., 4,269,126, Cl. 112-79.00R.

Pickett, John P. Bean divider. 4,269,018, Cl. 56-119.000.

Pilarczyk, Michal: *See—*
Libus, Wlodzimierz; Kluczkowski, Marek; Pilarczyk, Michal; Strzelecki, Henryk; Pastewski, Roman; and Grzybkowski, Waclaw, 4,269,676, Cl. 204-107.000.

Pilot Man-Nen Hitsu Kabushiki Kaisha: *See—*
Oki, Takeo; and Hirosawa, Shunichi, 4,269,528, Cl. 401-231.000.

Pilwat, Gunter: *See—*
Zimmermann, Ulrich; and Pilwat, Gunter, 4,269,826, Cl. 424-101.000.

Pines, Michael Y.; and Levy, Israel D., to Hughes Aircraft Company. Monolithic focal plane array having on-chip aperture corrector. 4,270,060, Cl. 307-221.00D.

Pioneer Electronic Corporation: *See—*
Furukawa, Hajime, 4,270,212, Cl. 455-3.000.
Yoshino, Toshikazu; Arai, Yasuyuki; Tsukagoshi, Tsunehiro; and Yokozeki, Shinichi, 4,269,416, Cl. 369-256.000.

Pira, Camille F.: *See—*
Verkinderen, Paul A.; Verhoeven, Ludovicus H.; Christiaen, Lucien A.; Pira, Camille F.; and Marckx, Michel L., 4,269,647, Cl. 156-157.000.

Pissiotas, Georg: *See—*
Szczepanski, Henry; Martin, Henry; Fory, Werner; and Pissiotas, Georg, 4,269,775, Cl. 260-340.700.

Platt, John R., to Illinois Tool Works Inc. Multi-unit container package. 4,269,308, Cl. 206-150.000.

Pleyber, Gaetan, to Commissariat a l'Energie Atomique. Process and apparatus for detecting the presence of a physical phenomenon. 4,270,041, Cl. 235-92.0MT.

Podolsky, Leaman B.: *See—*
Ronnen, Uri G.; Podolsky, Leaman B.; and Giras, Theodore C., 4,270,055, Cl. 290-40.00R.

Polak, Michael J.: *See—*
Fitzke, Emil V.; Wenner, Donald B.; and Polak, Michael J., 4,269,616, Cl. 55-493.000.

Polakowski, Theodore D., Jr.: *See—*
Dinella, Donald; Haller, Albert H.; and Polakowski, Theodore D., Jr., 4,269,138, Cl. 118-115.000.

Polaroid Corporation: *See—*
Barton, Derek H. R.; Bronstein-Bonte, Irena Y.; and Taylor, Lloyd D., 4,269,925, Cl. 430-215.000.
Bilofsky, Ruth C.; and Rogers, Howard G., 4,269,916, Cl. 430-11.000.

Politechnika Gdanska: *See—*
Libus, Wlodzimierz; Kluczkowski, Marek; Pilarczyk, Michal; Strzelecki, Henryk; Pastewski, Roman; and Grzybkowski, Waclaw, 4,269,676, Cl. 204-107.000.

Polko, Peter R., to Uarco Incorporated. Stationery burster. 4,269,341, Cl. 225-94.000.

Pollet, Robert J.: *See—*
Roosen, Raymond A.; Pollet, Robert J.; and Vandenberghe, Antoon L., 4,269,923, Cl. 430-140.000.

Polychrome Corporation: *See—*
Rowe, William, 4,269,680, Cl. 204-159.170.

Polyvend, Inc.: *See—*
Durham, Samuel; and Johnston, Max M., 4,269,325, Cl. 221-194.000.

Pomagalski S.A.: *See—*
Segafredo, Andre, 4,269,123, Cl. 104-178.000.

Ponsinet, Gerard: *See—*
Farge, Daniel; Jossin, Alain; Ponsinet, Gerard; and Reisdorf, Daniel, 4,269,842, Cl. 424-258.000.

Poole, William J.: *See—*
Blommers, Elizabeth A.; Poole, William J.; and Ingram, Alvin R., 4,269,871, Cl. 427-222.000.

Porritt, Gordon S.: *See—*
Deelman, Hayo E.; and Porritt, Gordon S., 4,269,100, Cl. 83-834.000.

Postel, William D., Jr.: *See—*
Morningstar, Marion G.; and Postel, William D., Jr., 4,269,954, Cl. 526-62.000.

Poteat, George A.: *See—*
Rosenthal, Stanley H.; and Poteat, George A., 4,269,124, Cl. 108-103.000.

Powell, Gordon F. W.; Bolt, Reginald C.; and Simmons, Albert, to Molins Limited. Cigarette weight control systems. 4,269,201, Cl. 131-280.000.

PPG Industries, Inc.: *See—*
DuBois, Donald D., 4,269,688, Cl. 204-254.000.
Lavanish, Jerome M., 4,269,983, Cl. 548-137.000.

Precisa AG Rechenmaschinenfabrik: *See—*
Gabler, Gerhard, 4,269,520, Cl. 400-196.000.

Price, Donald, to Greenbank-Cast Basalt Engineering Co. Limited. Hoods for the cylinder drying section of paper making machines and other cylinder drying machines. 4,268,974, Cl. 34-86.000.

Price, William; and Ellison, Howard W. Syphon-operated closet bowl flush tank. 4,268,924, Cl. 4-373.000.

Priegnitz, James W.; and Landis, Arthur M., to UOP Inc. Process for the separation of nitrotoluene isomers. 4,270,013, Cl. 568-940.000.

Prill, Robert S., to Singer Company, The. Solid state synchro torque receiver driver. 4,270,120, Cl. 340-347.0SY.

Prince, Hendrikus A.: *See—*
Klasema, Hendrik; and Prince, Hendrikus A., 4,269,801, Cl. 264-156.000.

Prince, Hendrikus Andreas: *See—*
Klasema, Hendrik; and Prince, Hendrikus A., 4,269,801, Cl. 264-156.000.

Principe, Viktor, to Arthur Schmid AG. Thread control device for stitching machines. 4,269,131, Cl. 112-273.000.

Prior Tire Enterprises Inc.: *See—*
Goldstein, Leon C., 4,269,644, Cl. 156-96.000.

Pritt, Rex M.: *See—*
Carlon, Hugh R.; and Pritt, Rex M., 4,270,084, Cl. 324-65.00R.

Procter & Gamble Company, The: *See—*
Flora, Lawrence; and Francis, Marion D., 4,269,828, Cl. 424-204.000.

Prodel, Ulrich H. Bottle packaging. 4,269,309, Cl. 206-203.000.
Products for Energy, Inc.: *See—*
Hickman, Lewis, 4,269,241, Cl. 144-2.00Z.
Pryor, Timothy R.; Alway, David M.; and Hageniers, Omer L., to Diffracto Ltd. Method and apparatus for marking parts. 4,269,874, Cl. 427-282.000.
Przybylinski, Phillip G.; Schuller, James J.; and Varda, Eugene I., to Pullman Incorporated. Railway wheel profilometer and diameter gage. 4,268,968, Cl. 33-174.00P.
Przystawik, Gunter. Water pump arrangement and electric circuitry for a fountain display. 4,269,352, Cl. 239-17.000.
Pullman Incorporated: *See—*
Edwards, William M.; and Huang, C. Peter, 4,269,812, Cl. 423-242.000.
Przybylinski, Phillip G.; Schuller, James J.; and Varda, Eugene I., 4,268,968, Cl. 33-174.00P.
Rehbein, Richard E., 4,269,220, Cl. 137-350.000.
Pye Limited: *See—*
Hunt, Richard J., 4,269,710, Cl. 210-198.200.
Pyne, Bernard; Gray, Reginald W. H.; and Barber, Peter R., to Timex Corporation. Watch strap with adjustable attachment end. 4,270,201, Cl. 368-282.000.
Pyramid Manufacturing Company: *See—*
Lawrence, Larry K., 4,269,009, Cl. 52-116.000.
Quaker Oats Company, The: *See—*
Cotey, John; and Volpe, Lee S., 4,268,991, Cl. 46-163.000.
Qualidyne Systems, Inc.: *See—*
Carpenter, Ronnie L.; and Cathell, Frank, 4,270,165, Cl. 363-65.000.
Quinlivan, Sandra C.: *See—*
Jones, Robert J.; Green, Howard E.; and Quinlivan, Sandra C., 4,269,961, Cl. 526-262.000.
Quinones, Nicanor Q.: *See—*
Hardy, Robert A., Jr.; Baker, Jannie S.; and Quinones, Nicanor Q., 4,269,980, Cl. 544-256.000.
R. T. Vanderbilt Company, Inc.: *See—*
Suhoza, Richard A., 4,269,761, Cl. 260-45.70S.
Rabenstein, Heinrich; Kalbitz, Angela; and Kleber, Karl H., to Varta Batterie Aktiengesellschaft. Lead storage battery with stored expander. 4,269,912, Cl. 429-225.000.
Rabinow, David: *See—*
Sease, D. Lamar; Solow, Benjamin; Boeckmann, Eduard F.; and Rabinow, David, 4,268,954, Cl. 29-620.000.
Racal-Milgo, Inc.: *See—*
Stuttard, Edward B.; Blackwell, John E.; and Chao, Jessie, 4,270,202, Cl. 370-80.000.
Radu, E. John: *See—*
Uyeda, Stanley T.; Radu, E. John; Talbot, William J., Jr.; and Feldman, Norman, 4,269,540, Cl. 405-168.000.
Rafikov, Sagid R.: *See—*
Tolstikov, Genrikh A.; Dzhemilev, Usein M.; Rutman, Grigory I.; Michurov, Jury I.; Pantukh, Boris I.; Shavanov, Stanislav S.; Rafikov, Sagid R.; Egoricheva, Sofia A.; Juriev, Valery P.; Liakumovich, Alexandr G.; Sobolev, Valerian M., Korotkevich, Boris S.; Shmuk, Jury A.; and Mandelshtamm, Elena Y., 4,270,016, Cl. 585-366.000.
Rahn, John P., to United States of America, Navy. Stray light eliminator in a scatterometer. 4,269,518, Cl. 356-445.000.
Raleigh, Ronald G.: *See—*
Bacon, Robert E.; Raleigh, Ronald G.; and Rosenfeld, Robert B., 4,269,914, Cl. 430-3.000.
Ralston Purina Company: *See—*
Retrum, Rowland, 4,269,865, Cl. 426-657.000.
Rao, Ganta V.; and Shoup, Floyd K., to Far-Mar-Co., Inc. Method and apparatus for fractionating the whole wheat kernel by sequential milling. 4,269,766, Cl. 260-112.00G.
Rao, V. Durga N., to Ford Motor Company. Elastomeric mounting for wave compressor supercharger. 4,269,570, Cl. 417-64.000.
Rao, V. Durga N.: *See—*
Knapp, Charles A.; and Rao, V. Durga N., 4,269,262, Cl. 165-8.000.
Rapp, Bruno: *See—*
Borchert, Herbert; Albert, Walter; Kohaut, Gunter; Schulte, Ulrich; and Rapp, Bruno, 4,269,895, Cl. 428-402.000.
Rapp, Kenneth L.; and Zolnerovich, Walter, Jr., to Owens-Corning Fiberglas Corporation. Microprocessor controlled product roving system. 4,269,368, Cl. 242-42.000.
Ratton, Serge, to Rhone-Poulenc Industries. Diazotization of aromatic amines. 4,269,767, Cl. 260-141.000.
Rau, Helmut: *See—*
Handtmann, Dieter; Rau, Helmut; and Zabler, Erich, 4,269,069, Cl. 73-705.000.
Ravida, Antonino: *See—*
Gilardoni, Giovanni; and Gilardoni, Sergio, 4,270,158, Cl. 361-42.000.
Ravida, Regina Carla Ezzevalli: *See—*
Gilardoni, Giovanni; and Gilardoni, Sergio, 4,270,158, Cl. 361-42.000.
Rayburn, Robert L.; Watson, Robert L.; Elbel, Charles R.; and Schweickardt, Karl W. Carbon dioxide measurement from expired gases in a partial rebreathing anesthesia circuit. 4,269,194, Cl. 128-719.000.
Raytheon Company: *See—*
Gordon, Bruce E., 4,270,204, Cl. 370-112.000.
Parker, Thomas E.; and Dunnrowicz, Clarence J., 4,270,105, Cl. 333-155.000.
RCA Corporation: *See—*
Ahmed, Adel A. A., 4,270,101, Cl. 331-111.000.
Bell, Alan E., 4,270,132, Cl. 346-135.100.
Clark, Charles A., Jr., 4,270,127, Cl. 343-5.00W.
Clark, Charles A., Jr., 4,270,157, Cl. 361-35.000.
Daniel, James W., Jr., 4,270,221, Cl. 455-208.000.
Deckert, Cheryl A.; and Schnable, George L., 4,269,654, Cl. 156-657.000.
Fitzke, Emil V.; Wenner, Donald B.; and Polak, Michael J., 4,269,616, Cl. 55-493.000.
Jindra, Clifford P.; and Atherton, James H., 4,270,190, Cl. 365-208.000.
Schwarzmann, Alfred, 4,270,104, Cl. 333-28.00R.
Weisbecker, Joseph A., 4,270,125, Cl. 340-744.000.
Reaktor-Brenneiment Union GmbH: *See—*
Sondermann, Thomas, 4,269,706, Cl. 210-682.000.
Reddaway, Stewart F., to International Computers Limited. Array processor. 4,270,170, Cl. 364-200.000.
Reddaway, Stewart F.: *See—*
Hunt, David J.; and Reddaway, Stewart F., 4,270,169, Cl. 364-200.000.
Redfarn, Cyril A., to Dixon International Limited. Composition for forming an intumescent material. 4,269,944, Cl. 521-100.000.
Redmore, Derek; and Outlaw, Benjamin T., to Petrolite Corporation. Quaternaries of hydroxyalkylaminoalkylamides. 4,270,001, Cl. 564-186.000.
Reekstin, John P.: *See—*
Elliott, Michael T.; Splinter, Michael R.; Jones, Addison B.; and Reekstin, John P., 4,268,951, Cl. 29-571.000.
Reeves, David L. R.: *See—*
Mason, Leslie F. A.; Kitzing, Rainer; Whitear, Brian R. D.; Long, William E.; Wood, Glenn P.; and Reeves, David L. R., 4,269,928, Cl. 430-239.000.
Rego Company: *See—*
Odar, Larry F., 4,269,215, Cl. 137-75.000.
Rehbein, Richard E., to Pullman Incorporated. Tank valve mounting arrangement. 4,269,220, Cl. 137-350.000.
Rehrmann, Helmut: *See—*
Fitzky, Hans G.; Soder, Jorg M.; Schmitt, Franz; Bollongino, Norbert; and Rehrmann, Helmut, 4,270,083, Cl. 324-58.50C.
Reiner, Joseph R.; and Breister, Sigmund, to Olin Corporation. Use of heavy metal chelates of 2-mercaptopyridine-N-oxide to separate selected precious metals from acidic solutions. 4,269,621, Cl. 75-101.0BE.
Reinschreiber, Merwyn R., to Cole Consumer Products, Inc. Knife with blade locking mechanism. 4,268,960, Cl. 30-161.000.
Reisdorf, Daniel: *See—*
Farge, Daniel; Jossin, Alain; Ponsinet, Gerard; and Reisdorf, Daniel, 4,269,842, Cl. 424-258.000.
Rempel, William D.: *See—*
Levinson, Leo; and Rempel, William D., 4,269,522, Cl. 400-616.100.
Research-Cottrell, Inc.: *See—*
Hankins, Frederick E.; and Umberger, John H., 4,270,086, Cl. 368-118.000.
Retrum, Rowland, to Ralston Purina Company. Process for the production of a food product from feathers. 4,269,865, Cl. 426-657.000.
Rex Industries Co., Ltd.: *See—*
Taira, Tsuneo, 4,268,959, Cl. 30-94.000.
Rexine, Carl A. Hideaway tow hitch. 4,269,428, Cl. 280-491.00R.
Reynolds, Gordon S.; and Todd, Robert J., to Sorenson Research Co., Inc. Needle valve and method of manufacturing a needle valve. 4,269,387, Cl. 251-122.000.
Rhone-Poulenc Industries: *See—*
Farge, Daniel; Jossin, Alain; Ponsinet, Gerard; and Reisdorf, Daniel, 4,269,842, Cl. 424-258.000.
Locatelli, Jean-Louis, 4,269,952, Cl. 525-507.000.
Ratton, Serge, 4,269,767, Cl. 260-141.000.
Rich, Jackson E. Portable hand carried kit for a set of wrenches and the like. 4,269,311, Cl. 206-234.000.
Richard, Gerard Y., to Societe D'Applications de Procedes Industriels et Chimiques S.A.P.I.C. Method for hardening a composition particularly intended for making foundry cores and moulds. 4,269,758, Cl. 260-38.000.
Richdel, Inc.: *See—*
Saarem, Myrl J.; Lovelace, Donald E.; Firebaugh, Dale C.; and Soukup, Dale F., 4,269,229, Cl. 137-869.000.
Richman, Stephan S., to Marshall Electronics, Inc. Method and apparatus for determining the accuracy of a sphygmomanometer. 4,269,058, Cl. 73-4.00R.
Richter, Hanno: *See—*
Leibhard, Erich; Gruenewald, Heinz; and Richter, Hanno, 4,269,106, Cl. 411-34.000.
Richter, Konrad J., Sr., to Heinemann Electric Company. Snap on mounting clip for circuit breakers. 4,270,035, Cl. 200-294.000.
Richter, Michael: *See—*
Goeke, Ulrich; and Richter, Michael, 4,269,742, Cl. 260-18.0PN.
Rickenbach, David H.: *See—*
Lee, Ho C.; Rickenbach, David H.; and Zable, Jack L., 4,269,117, Cl. 101-93.020.
Ricoh Company, Ltd.: *See—*
Adachi, Eiichi, 4,270,146, Cl. 358-256.000.
Adachi, Eiichi, 4,270,148, Cl. 358-260.000.
Mori, Masaaki, 4,269,482, Cl. 350-358.000.
Sifford, Bruce M.; and Magill, D. Thomas, 4,270,179, Cl. 364-724.000.

Rideal, Graham R.: *See—*
Ballard, Denis G. H.; Meredith, William N. E.; and Rideal, Graham R., 4,269,628, Cl. 106-86.000.

Ridenour, Ralph G. Tube-to-tube joint. 4,269,438, Cl. 285-382.200.

Riegel Textile Corporation: *See—*
Worth, Daniel L.; and Freeman, Ernest A., Jr., 4,269,602, Cl. 8-116.400.
Worth, Daniel L., 4,269,603, Cl. 8-116.400.

Riessland, Eberhard; and Kruger, Karl-Heinz, to VEB Elektromat. Bounce-free lifting device. 4,270,109, Cl. 335-277.000.

Rincon Industries, Inc.: *See—*
Hauser, Stephen G., 4,270,039, Cl. 219-439.000.

RIS Irrigation Systems: *See—*
Menzel, S. W. O.; Mock, Donald E.; Mominee, David E.; Vance, Gilbert W.; and Zauner, Dale P., 4,269,357, Cl. 239-272.000.

Ritchey, Thomas W., Jr.: *See—*
Diermann, Joachim P.; and Ritchey, Thomas W., Jr., 4,270,150, Cl. 360-10.000.

Rivoli, Anthony L.; Morcom, William R.; Nicolay, Hugh C.; and Cox, Eugene R., to Harris Corporation. Method of fabricating self-aligned bipolar transistor process and device utilizing etching and self-aligned masking. 4,269,636, Cl. 148-175.000.

Roach, Bobbie R., Jr. Christmas tree trim cabinet. 4,269,461, Cl. 312-244.000.

Robert Bosch GmbH: *See—*
Handtmann, Dieter; Rau, Helmut; and Zabler, Erich, 4,269,069, Cl. 73-705.000.
Kopse, Odon, 4,269,360, Cl. 239-533.800.
Schneider, Yves; and Dubuisson, George, 4,269,281, Cl. 180-70.00R.

Robertson, Forrest E.; and Williams, Donald E., to Acra Plant, Inc. Streamlined wear-resistant deep tillage tool. 4,269,274, Cl. 172-699.000.

Robertson, King G.; and McAuliffe, Donald C., to Coors Container Company. Fabrication of aluminum alloy sheet from scrap aluminum for container components. 4,269,632, Cl. 148-2.000.

Robinson, Robert L.; Hoff, David C.; and Midling, Robert L., to Lockheed Aircraft Corp. Data dejittering apparatus. 4,270,183, Cl. 364-900.000.

Rockwell, Dale L., to Combustion Engineering, Inc. Method of forming fusion cast refractories. 4,269,799, Cl. 264-85.000.

Rockwell International Corporation: *See—*
Agrawal, Suphal P.; and Weisert, Edward D., 4,269,053, Cl. 72-42.000.
Elliott, Michael T.; Splinter, Michael R.; Jones, Addison B.; and Reekstin, John P., 4,268,951, Cl. 29-571.000.
Eshghy, Siavash, 4,268,944, Cl. 29-407.000.
Flanagan, Joseph E., 4,269,637, Cl. 149-19.100.
Glass, Howard L.; and Henry, Rodney D., 4,269,651, Cl. 156-601.000.
Marston, Robert K., 4,270,223, Cl. 455-305.000.
Molina, Orlando G., 4,269,068, Cl. 73-644.000.
Yeh, Pochi A.; and Tracy, John M., 4,269,481, Cl. 350-356.000.
Ziegelbein, Paul J.; Dawson, Sylvan L.; and Erickson, Gerald A., 4,270,117, Cl. 340-168.00B.

Rodriquez, Claude: *See—*
Ammon, J. Preston; Weaver, Harry R.; and Rodriquez, Claude, 4,269,468, Cl. 339-176.00M.

Roethlein, Richard J.: *See—*
DeCasperis, Anthony J.; Roethlein, Richard J.; and Breault, Richard D., 4,269,642, Cl. 156-89.000.

Rogers, Henry J., to National Research Development Corporation. Enterochelin complexes. 4,269,850, Cl. 424-279.000.

Rogers, Howard G.: *See—*
Bilofsky, Ruth C.; and Rogers, Howard G., 4,269,916, Cl. 430-11.000.

Roggero, Bruno: *See—*
Dotti, Giulio; Bertone, Antonino; and Roggero, Bruno, 4,269,224, Cl. 137-596.150.

Rohm and Haas Company: *See—*
Costin, Charles R., 4,269,943, Cl. 521-33.000.
Seidel, Michael; Weir, W. David; and Wolfersberger, Martha H., 4,269,829, Cl. 424-211.000.

Rohr Industries, Inc.: *See—*
Carrillo, Robert M.; and Koss, Muriel L., 4,269,882, Cl. 428-116.000.

Rohrmann, Charles A., to Battelle Memorial Institute. Production of chlorine from chloride salts. 4,269,817, Cl. 423-502.000.

Rohsenow, Warren R.: *See—*
Glicksman, Leon R.; and Rohsenow, Warren R., 4,269,796, Cl. 261-112.000.

Rokhvarg, Yakov. Animal house. 4,269,145, Cl. 119-16.000.

Roldwest Limited: *See—*
Chodosh, Edward, 4,269,334, Cl. 223-28.000.

Rolls-Royce Limited: *See—*
Lind, David J.; Coffey, Valerie J.; and Hallam, Joyce, 4,269,876, Cl. 427-309.000.
Livsey, Norman B., 4,269,868, Cl. 427-53.100.

Ronayne, James F., to Norfield Corporation. Heated platen. 4,269,586, Cl. 425-407.000.

Rongved, Paul I. Waste water treatment system with aeration and circulation means. 4,269,709, Cl. 210-195.300.

Ronnen, Uri G.; Podolsky, Leaman B.; and Giras, Theodore C., to Westinghouse Electric Corp. System and method for transferring the operation of a turbine-power plant between single and sequential modes of turbine valve operation. 4,270,055, Cl. 290-40.00R.

Roosen, Raymond A.; Pollet, Robert J.; and Vandenberghe, Antoon L., to AGFA-GEVAERT N.V. Photographic imaging process and materials suitable therefor. 4,269,923, Cl. 430-140.000.

Rosch, Fritz, to Alcan Aluminiumwerk Nurnberg GmbH. Machine housing with relatively thin-walled structural member. 4,269,287, Cl. 188-1.00B.

Rose, Carl J.; and Miller, David, to Beecham Group Limited. Chemical process for the preparation of 4-(6^1-methoxy-2^1-naphthyl)butan-2-one. 4,270,004, Cl. 568-314.000.

Rose, Donald D. Portable agricultural sprayer. 4,269,356, Cl. 239-167.000.

Rosen, Charles L. Propulsion system for automotive vehicles. 4,269,280, Cl. 180-54.00C.

Rosenfeld, Robert B.: *See—*
Bacon, Robert E.; Raleigh, Ronald G.; and Rosenfeld, Robert B., 4,269,914, Cl. 430-3.000.

Rosenkranz, Hans J.: *See—*
Elfert, Klaus; Wolf, Gerhard D.; and Rosenkranz, Hans J., 4,269,967, Cl. 528-337.000.

Rosenthal, Stanley H.; and Poteat, George A., to Rosenthal, Stanley H. Merchandise display rack. 4,269,124, Cl. 108-103.000.

Rosenthal Technik AG: *See—*
Zeibig, Anton, 4,268,919, Cl. 3-1.910.

Ross, Joseph A.: *See—*
DiMatteo, Paul L.; Ross, Joseph A.; and Stern, Howard K., 4,269,513, Cl. 356-376.000.

Rosser, Robert W.: *See—*
United States of America, National Aeronautics and Space Administration; Rosser, Robert W.; Shalhoub, Ibrahim M.; and Kwong, Hanoi, 4,269,787, Cl. 260-465.50R.

Rothman, Myron: *See—*
Gans, Leo; Bruins, Paul F.; Shapiro, Jay B.; and Rothman, Myron, 4,269,897, Cl. 428-419.000.

Rottmaier, Ludwig: *See—*
Lewalter, Jurgen; Rottmaier, Ludwig; Merten, Rudolf; Zecher, Wilfried; Dunwald, Willi; and Schulte, Bernhard, 4,269,750, Cl. 260-30.200.

Roueche, Armand, to Ciba-Geigy Corporation. Pigment of sodium salt of bis-methine-barbituric acid. 4,269,976, Cl. 542-445.000.

Rovel, Jean-Marie: *See—*
Barraque, Christian; Burriat, Jean; and Rovel, Jean-Marie, 4,269,715, Cl. 210-675.000.

Rowe, William, to Polychrome Corporation. Curable polymeric composition comprising natural or synthetic rubbers. 4,269,680, Cl. 204-159.170.

Roxton, George F., to Paratech Incorporated. Rescue tool. 4,268,926, Cl. 7-143.000.

Rubens, George J. Fluid measuring container closure cap. 4,269,319, Cl. 215-228.000.

Rubenstein, Daniel: *See—*
Rubenstein, Maurice D.; and Rubenstein, Daniel, 4,269,317, Cl. 211-72.000.

Rubenstein, Maurice D.; and Rubenstein, Daniel. Dispenser support. 4,269,317, Cl. 211-72.000.

Ruchser, Erich; and Ott, Helmut, to Technomatic AG. Safety valve assembly. 4,269,225, Cl. 137-596.160.

Ruell, Hartwig: *See—*
Flothmann, Detlev; Ruell, Hartwig; and Staimer, Angelika, 4,269,473, Cl. 350-3.610.

Ruggeri, Giovanni: *See—*
Bonomini, Vittorio; and Ruggeri, Giovanni, 4,269,708, Cl. 210-90.000.

Ruhrchemie Aktiengesellschaft: *See—*
Weber, Jurgen; Bernhagen, Wolfgang; and Springer, Helmut, 4,270,008, Cl. 568-448.000.

Ruiz, W. V.: *See—*
United States of America, National Aeronautics and Space Administration; Ruiz, W. V.; and Thatcher, C. S., 4,269,640, Cl. 156-84.000.

Rulevsky, Evgeny V.: *See—*
Unigovsky, Mikhail R.; Rulevsky, Evgeny V.; Arendt, Georgy A.; Chirskov, Vladimir G.; Konovalov, Julian K.; Ivanov, Vasily T.; Nemirovsky, Isaak Y.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; and Kheinis, Alexandr B., 4,269,552, Cl. 409-140.000.

Ruof, Edgar J.: *See—*
Beck, Arnold A.; and Ruof, Edgar J., 4,269,455, Cl. 303-106.000.

Rusche, Fredric. In situ pile forming apparatus. 4,269,544, Cl. 405-239.000.

Rush, Donald L.; and Kapadia, Jayant K., to Westinghouse Electric Corp. Door control for train vehicles. 4,269,377, Cl. 246-182.00B.

Rutenberg, Morton W.; and Molnar, Thomas R., to National Starch and Chemical Corporation. Preparation of guar gum. 4,269,975, Cl. 536-114.000.

Rutman, Grigory I.: *See—*
Tolstikov, Genrikh A.; Dzhemilev, Usein M.; Rutman, Grigory I.; Michurov, Jury I.; Pantukh, Boris I.; Shavanov, Stanislav S.; Rafikov, Sagid R.; Egoricheva, Sofia A.; Juriev, Valery P.; Liakumovich, Alexandr G.; Sobolev, Valerian M.; Korotkevich, Boris S.; Shmuk, Jury A.; and Mandelshtamm, Elena Y., 4,270,016, Cl. 585-366.000.

Rutten, Paul J. Apparatus for loading and unloading objects relative to a carrier vehicle. 4,269,561, Cl. 414-462.000.

Rutter, Harold T., to Sunnen Products Company. Fixture for aligning and locating the axis of rotation of a rotatable member. 4,269,000, Cl. 51-165.740.

Ryan, John E. Replaceable guide post. 4,269,534, Cl. 404-10.000.

Ryan, Kenneth M.: *See—*
Melillo, David G.; and Ryan, Kenneth M., 4,269,772, Cl. 260-245.20T.

Ryan, Patrick J.: *See—*
Ury, Michael G.; and Ryan, Patrick J., 4,269,581, Cl. 425-174.400.

Rzechula, Joseph A. Absorption unit with variant control system. 4,269,034, Cl. 62-141.000.

Saarem, Myrl J.; Lovelace, Donald E.; Firebaugh, Dale C.; and Soukup, Dale F., to Richdel, Inc. Solar heat system. 4,269,229, Cl. 137-869.000.

Sach, George S.: *See—*
Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., 4,269,844, Cl. 424-263.000.

Saeed, Amin; and Hill, James B., to DAF Indal Ltd. Collapsible structures employing frangible connections. 4,269,384, Cl. 248-548.000.

SAES Getters S.p.A.: *See—*
Figini, Alessandro, 4,269,624, Cl. 75-177.000.

Saint-Gobain Industries: *See—*
Sommer, Rolf; Schweinfurth, Gustav; and Ungerer, Heinz-Jurgen, 4,269,800, Cl. 264-111.000.

Saito, Shozo, to Tokyo Shibaura Denki Kabushiki Kaisha. Nonvolatile semiconductor memory apparatus. 4,270,188, Cl. 365-189.000.

Saito, Shuichi. Bandsaw blade tensioning apparatus for horizontal bandsaw machines. 4,269,099, Cl. 83-819.000.

Saito, Tutomu; Yamazoe, Hiroshi; and Yamaoka, Hidenori, to Nippon Petrochemicals Co., Ltd.; Nippon Carbon Co., Ltd.; and Kitamura Valve Seizo Kabushiki Kaisha. Valve sealing device and a valve. 4,269,391, Cl. 251-315.000.

Sakaguchi, Mitsuhito: *See—*
Ohta, Yoshinori; Kubota, Keiichi; and Sakaguchi, Mitsuhito, 4,270,149, Cl. 358-293.000.

Sakai, Junji: *See—*
Nakazawa, Tetsuo; Sakai, Junji; and Morimoto, Syogo, 4,269,256, Cl. 164-16.000.

Sakai, Masahiko; Toyoda, Shinichi; Narahara, Toshikazu; Hakamada, Takeshi; and Tsunoda, Tomoya, to Hitachi, Ltd. Electric windings and production thereof characterized by the use of a condensation type silicon resin for combination with an addition type silicon resin. 4,269,894, Cl. 428-377.000.

Sakamoto, Takashi, to Dainippon Screen Seizo Kabushiki Kaisha. Method and machine for reproducing a color picture by storing signal streams, one entirely, and the rest partially. 4,270,141, Cl. 358-78.000.

Sakharnov, Vasily A.: *See—*
Unigovsky, Mikhail R.; Rulevsky, Evgeny V.; Arendt, Georgy A.; Chirskov, Vladimir G.; Konovalov, Julian K.; Ivanov, Vasily T.; Nemirovsky, Isaak Y.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; and Kheinis, Alexandr B., 4,269,552, Cl. 409-140.000.

Sakurai, Akira; Tsuchiya, Yoshimi; and Mizutani, Hiroshi, to Kao Soap Co., Ltd. Tampon. 4,269,187, Cl. 128-263.000.

Sakurai, Hideaki: *See—*
Kizu, Ryohei; Matoba, Taketo; Oguni, Yasuo; and Sakurai, Hideaki, 4,269,043, Cl. 64-11.00R.

Sallander, Hakan: *See—*
Bramberger, Bo C.; and Stenudd, Kurt G., 4,269,283, Cl. 181-207.000.

Salmon, James E. Musical percussion instrument. 4,269,105, Cl. 84-402.000.

Salomatin, Viktor M. Device for controlling hydraulic motors. 4,269,228, Cl. 137-636.000.

Salomon, Georges P. J., to Etablissements Francois Salomon et Fils. Process of manufacturing an inner boot. 4,268,931, Cl. 12-146.00R.

Samsonite Corporation: *See—*
Haberlein, Peter, 4,270,089, Cl. 324-262.000.

Sandmore, Donald K.: *See—*
Meal, John R.; and Sandmore, Donald K., 4,268,942, Cl. 29-25.420.

Santa Fe International Corporation: *See—*
Uyeda, Stanley T.; Radu, E. John; Talbot, William J., Jr.; and Feldman, Norman, 4,269,540, Cl. 405-168.000.

Sard, Richard: *See—*
Cohen, Uri; and Sard, Richard, 4,269,671, Cl. 204-23.000.

Sargent & Greenleaf, Inc.: *See—*
Bechtiger, Charles G.; and Miller, James C., 4,269,050, Cl. 70-272.000.

Sargent Industries, Inc.: *See—*
Crowe, Donald R., 4,269,386, Cl. 251-74.000.

Sargis, John R.; and AES Technology Systems, Inc. Method and apparatus for collating and stacking documents and for effecting a high density stack in a document receiving bin. 4,269,401, Cl. 270-58.000.

Sasaki, Michiaki, to Nissan Motor Company, Limited. Safety valve. 4,269,213, Cl. 137-38.000.

Sasaki, Takehiko; and Maeda, Hidetoshi, to Sharp Kabushiki Kaisha. Switching mechanism for electronic wristwatch. 4,270,199, Cl. 368-224.000.

Sastre, Cesar: *See—*
Schweitzer, Donald G.; Sastre, Cesar; and Winsche, Warren, 4,269,728, Cl. 252-301.10W.

Sato, Kozo: *See—*
Kato, Hajime; Satomura, Masato; and Sato, Kozo, 4,269,893, Cl. 428-341.000.

Sato, Makoto, to Makino Milling Machine Co., Ltd. Tracing milling machine. 4,268,949, Cl. 29-568.000.

Sato, Masanori; Wakabayashi, Hiroharu; Ejiri, Yoshihiro; and Yamamoto, Hitoshi, to Kokusai Denshin Denwa Kabushiki Kaisha. Selection system for digital signal repeaters. 4,270,029, Cl. 179-175.31R.

Satomura, Masato: *See—*
Kato, Hajime; Satomura, Masato; and Sato, Kozo, 4,269,893, Cl. 428-341.000.

Saul, Michael R.: *See—*
Barford, Eric D.; Gray, Robin A.; and Saul, Michael R., 4,269,723, Cl. 252-106.000.

Saulin, Albert B.: *See—*
Galkin, Jury M.; Saulin, Albert B.; and Olshvang, Jury N., 4,270,051, Cl. 250-358.00R.

Saunders, Graham J., to Huwood Limited. Mine working apparatus. 4,269,546, Cl. 405-294.000.

Sautel, Francis: *See—*
Bayssat, Michel; Sautel, Francis; Depin, Jean-Claude; and Matibet, Annie B., 4,269,848, Cl. 424-275.000.

Savage, Charles E.: *See—*
Hornby, Roger B.; Lipps, Bennie J.; and Savage, Charles E., 4,269,712, Cl. 210-321.300.

Savin Corporation: *See—*
Landa, Benzion, 4,269,504, Cl. 355-3.0SH.

Sawada, Daisaku: *See—*
Iwata, Toshiharu; Hattori, Tadashi; Mukainakano, Siniti; Goto, Kenji; and Sawada, Daisaku, 4,269,154, Cl. 123-425.000.
Iwata, Toshiharu; Hattori, Tadashi; Mukainakano, Siniti; Goto, Kenji; and Sawada, Daisaku, 4,269,155, Cl. 123-425.000.

Sawamura, Ichiro; Miyazaki, Kensaku; and Yonekubo, Ken, to Olympus Optical Co., Ltd. Microscope for quantitative determination of substance in specimen. 4,269,517, Cl. 356-432.000.

Sawase, Terumi: *See—*
Hagiwara, Yoshimune; Sawase, Terumi; Takai, Atsushi; Kita, Yuzo; and Honda, Akira, 4,270,220, Cl. 455-182.000.

Sawyer, Patrick F., to Girlock Limited. Brake pressure control valves. 4,269,453, Cl. 303-6.00C.

Sbuelz, Anes, to Italtel S.p.A. Process for splicing a coaxial cable with a conductor composed of individually enameled wire strands to a coaxial connector. 4,268,957, Cl. 29-871.000.

Scentex Corporation: *See—*
Wright, Charles W., 4,269,292, Cl. 192-33.00R.

Schadlich, Renate: *See—*
Moraw, Roland; and Schadlich, Renate, 4,269,932, Cl. 430-290.000.

Schall, Wayne E.; Miller, John E.; and Gabriel, John F., to Owens-Illinois, Inc. Apparatus for pre-heating thermoplastic parisons. 4,268,975, Cl. 34-105.000.

Scharf, Raymond J., Sr. Tree protector. 4,268,992, Cl. 47-23.000.

Schauer, Alois: *See—*
Krueger, Hans; Schauer, Alois; and Walter, Karl-Heinz, 4,269,480, Cl. 350-355.000.

Schechter, Berton: *See—*
Clingman, David L.; Cavanagh, John R.; Schechter, Berton; and Cross, Kenneth R., 4,269,903, Cl. 428-591.000.

Schering Aktiengesellschaft: *See—*
Goeke, Ulrich; and Richter, Michael, 4,269,742, Cl. 260-18.0PN.
Gries, Heinz, 4,269,819, Cl. 424-5.000.
Niedballa, Ulrich; and Bottcher, Irmgard, 4,269,847, Cl. 424-273.00R.

Scheurecker, Werner: *See—*
Engel, Kurt; and Scheurecker, Werner, 4,269,260, Cl. 164-442.000.

Schiavuzzi, Roberto: *See—*
Cavallino, Francesco; Martinez, Pasquale; Allione, Michele; and Schiavuzzi, Roberto, 4,269,029, Cl. 60-293.000.

Schiebroek, Cornelis J. M. Explosion-proof building. 4,269,004, Cl. 52-1.000.

Schlafer, John: *See—*
Dakss, Mark L.; Kim, Bumman; and Schlafer, John, 4,269,648, Cl. 156-293.000.

Schlegel, Earl S.; and Hanes, Maurice H., to Westinghouse Electric Corp. High-frequency phototransistor operated with multiple light sources. 4,270,135, Cl. 357-19.000.

Schlichte, Max, to Siemens Aktiengesellschaft. System for synchronizing exchanges of a telecommunications network. 4,270,211, Cl. 375-107.000.

Schlumberger Technology Corporation: *See—*
Escaron, Pierre C.; and Hoppe, Joachim A., 4,269,063, Cl. 73-151.000.

Schmechtig, Rune, to Aktiebolaget Tudor. Pump device. 4,269,906, Cl. 429-67.000.

Schmitt, Franz: *See—*
Fiizky, Hans G.; Soder, Jorg M.; Schmitt, Franz; Bollongino, Norbert; and Rehrmann, Helmut, 4,270,083, Cl. 324-58.50C.

Schmitt, Frederick L.: *See—*
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,269,862, Cl. 426-536.000.

Schmitt, Susan M.: *See—*
Christensen, Burton G.; Johnston, David B. R.; and Schmitt, Susan M., 4,269,873, Cl. 424-274.000.

Schnable, George L.: *See—*
Deckert, Cheryl A.; and Schnable, George L., 4,269,654, Cl. 156-657.000.

Schneider, Charles A.: *See—*
Carr, Richard P.; Nanda, Ashok K.; Schneider, Charles A.; and Malhotra, Girish K., 4,269,987, Cl. 548-257.000.

Schneider-Muntau, Hans-Jorg; and Hackbarth, Klaus, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Normal conductive or superconductive magnet coil. 4,270,112, Cl. 336-197.000.

Schneider, Yves; and Dubuisson, George, to Robert Bosch GmbH. Automatic transmission digital control system. 4,269,281, Cl. 180-70.00R.

Schnoes, Heinrich K.: *See*—
De Luca, Hector F.; Schnoes, Heinrich K.; Napoli, Joseph L.; and Fivizzani, Mary A., 4,269,777, Cl. 260-397.100.

Schoengen, Anton; and Schroeder, Heinrich, to Dynamit Nobel Aktiengesellschaft. Reactor for the oxidation of alkyl aromatics with oxygen-containing gases in the liquid phase. 4,269,805, Cl. 422-106.000.

Scholl, Inc.: *See*—
Gudas, Charles J., 4,268,980, Cl. 36-43.000.

Schornack, Louis W. Power supply and control circuit for series connected controller. 4,270,058, Cl. 307-140.000.

Schreyer, Gerd: *See*—
Hentschel, Klaus; Bittner, Friedrich; and Schreyer, Gerd, 4,269,979, Cl. 544-190.000.

Schroder, Ernst. Amplifier having a variable propagation constant. 4,270,103, Cl. 333-14.000.

Schroder, Rolf: *See*—
Engelsmann, Dieter; and Schroder, Rolf, 4,269,492, Cl. 354-42.000.

Schroeder, Heinrich: *See*—
Schoengen, Anton; and Schroeder, Heinrich, 4,269,805, Cl. 422-106.000.

Schuegraf, Eberhard, to Siemens Aktiengesellschaft. Rectangular waveguide elbow formed with a truncated corner and having pipes formed therein. 4,270,107, Cl. 333-249.000.

Schuierer, Manfred, to Bruckner Apparatebau. Apparatus for passing a working medium through a continuously moving permeable fabric web. 4,269,047, Cl. 68-181.00R.

Schuller, James J.: *See*—
Przybylinski, Phillip G.; Schuller, James J.; and Varda, Eugene I., 4,268,968, Cl. 33-174.00P.

Schulte, Bernhard: *See*—
Lewalter, Jurgen; Rottmaier, Ludwig; Merten, Rudolf; Zecher, Wilfried; Dunwald, Willi; and Schulte, Bernhard, 4,269,750, Cl. 260-30.200.

Schulte, Ulrich: *See*—
Borchert, Herbert; Albert, Walter; Kohaut, Gunter; Schulte, Ulrich; and Rapp, Bruno, 4,269,895, Cl. 428-402.000.

Schultz, Gene, to Sornsin, Earl W., a part interest. Earth working implement control system. 4,269,535, Cl. 404-117.000.

Schultz, Gerald A.: *See*—
Kolczynski, James R.; and Schultz, Gerald A., 4,269,726, Cl. 252-186.000.

Schultz, Terrence R.: *See*—
Falk, Terrence F.; Schultz, Terrence R.; and Hoffmann, James E., 4,270,213, Cl. 455-77.000.

Schurman Machine Works, Inc.: *See*—
Kinsella, Phillip W., 4,269,244, Cl. 144-218.000.

Schwarz, Gail B.; and Hickinbotham, Lawrence F., to General Technology, Inc. Force-exerting machine. 4,269,114, Cl. 100-53.000.

Schwarzmann, Alfred, to RCA Corporation. Phase equalizer in microwave transmission line. 4,270,104, Cl. 333-28.00R.

Schweickardt, Karl W.: *See*—
Rayburn, Robert L.; Watson, Robert L.; Elbel, Charles R.; and Schweickardt, Karl W., 4,269,194, Cl. 128-719.000.

Schweinfurth, Gustav: *See*—
Sommer, Rolf; Schweinfurth, Gustav; and Ungerer, Heinz-Jurgen, 4,269,800, Cl. 264-111.000.

Schweitzer, Donald G.; Sastre, Cesar; and Winsche, Warren, to United States of America, Energy. Method for storing spent nuclear fuel in repositories. 4,269,728, Cl. 252-301.10W.

SCM Corporation: *See*—
Longrod, Scott J., 4,269,521, Cl. 400-472.000.

Scott, John W.: *See*—
Brana, Lejo C.; and Scott, John W., 4,268,967, Cl. 33-1.00V.

Sease, D. Lamar; Solow, Benjamin; Boeckmann, Eduard F.; and Rabinow, David, to Angstrohm Precision Incorporated. Method of making non-inductive cylindrical thin film resistor. 4,268,954, Cl. 29-620.000.

Segafredo, Andre, to Pomagalski S.A. Safety device for a rocker of sheaves supporting an overhead cable. 4,269,123, Cl. 104-178.000.

Seidel, Michael; Weir, W. David; and Wolfersberger, Martha H., to Rohm and Haas Company. Method and composition for treating helminths containing O,O-dialkyl-N-(substituted phenyl)aminothiocarbonyl phosphoramidates. 4,269,829, Cl. 424-211.000.

Seika Sangyo Co., Ltd.: *See*—
Kawabata, Shigekatsu, 4,269,808, Cl. 423-1.000.

Seiko Koki Kabushiki Kasiha: *See*—
Ogihara, Masuo; Chimura, Kozo; Shinozaki, Nobuo; and Seki, Yoichi, 4,270,195, Cl. 368-74.000.

Seilly, Alec H., to Lucas Industries Limited. Fuel injection nozzles. 4,269,361, Cl. 239-585.000.

Seilly, Alec H.; and Sorderskov, Rasmus J., to Lucas Industries Limited. Valve operating mechanism. 4,269,388, Cl. 251-138.000.

Seki, Yoichi: *See*—
Ogihara, Masuo; Chimura, Kozo; Shinozaki, Nobuo; and Seki, Yoichi, 4,270,195, Cl. 368-74.000.

Sekiya, Fukuo: *See*—
Morokawa, Shigeru; Sekiya, Fukuo; Hashimoto, Yukio; Nomura, Yasushi; and Koga, Keiichiro, 4,270,194, Cl. 368-73.000.

Serafica, Mario: *See*—
Valentini, Silvio; and Serafica, Mario, 4,269,418, Cl. 277-14.00V.

Seto, Haruo: *See*—
Yamagishi, Michio; Kawashima, Akira; Mizutani, Taku; Hara, Hiroshi; Mizoue, Kazutoshi; Omura, Sadafumi; Seto, Haruo; and Otake, Noboru, 4,269,971, Cl. 536-17.00R.

Shackleton, Charles E. E., deceased; Shackleton, Edward A. B., executor; Wickens, Anthony J.; and Turner, John H. W., to Mineral Process Licensing Corp. BV. Preparation of anhydrous magnesium chloride. 4,269,816, Cl. 423-498.000.

Shackleton, Edward A. B., executor: *See*—
Shackleton, Charles E. E., deceased; Shackleton, Edward A. B., executor; Wickens, Anthony J.; and Turner, John H. W., 4,269,816, Cl. 423-498.000.

Shaffer, Howard R.; and Wycheck, Thomas H., to AMP Incorporated. Electrical terminal. 4,269,472, Cl. 339-223.00R.

Shalhoub, Ibrahim M.: *See*—
United States of America, National Aeronautics and Space Administration; Rosser, Robert W.; Shalhoub, Ibrahim M.; and Kwong, Hanoi, 4,269,787, Cl. 260-465.50R.

Shapiro, Daniel H.: *See*—
Miko, Richard J.; and Shapiro, Daniel H., 4,269,613, Cl. 55-278.000.

Shapiro, David. Tire pressure maintenance device. 4,269,252, Cl. 152-426.000.

Shapiro, Jay B.: *See*—
Gans, Leo; Bruins, Paul F.; Shapiro, Jay B.; and Rothman, Myron, 4,269,897, Cl. 428-419.000.

Shapland, Earl P. Sailboat with universal roll furling sail housing. 4,269,134, Cl. 114-107.000.

Sharak, Errol W.; and Sharak, George E., Sr., to Sharak, Errol W. Wind turbine. 4,269,563, Cl. 415-2.00R.

Sharak, George E., Sr.: *See*—
Sharak, Errol W.; and Sharak, George E., Sr., 4,269,563, Cl. 415-2.00R.

Sharki, Martin J.: *See*—
Phillips, Victor Q.; Griffin, Phil H.; and Sharki, Martin J., 4,269,567, Cl. 415-168.000.

Sharp Kabushiki Kaisha: *See*—
Sasaki, Takehiko; and Maeda, Hidetoshi, 4,270,199, Cl. 368-224.000.
Shimazawa, Yoichi; and Kawamoto, Toshiaki, 4,270,133, Cl. 346-140.00R.

Shattuck, Meredith D.; and Weiche, William J., to International Business Machines Corporation. Polyester ribbon for non-impact printing. 4,269,892, Cl. 428-337.000.

Shavanov, Stanislav S.: *See*—
Tolstikov, Genrikh A.; Dzhemilev, Usein M.; Rutman, Grigory I.; Michurov, Jury I.; Pantukh, Boris I.; Shavanov, Stanislav S.; Rafikov, Sagid R.; Egoricheva, Sofia A.; Juriev, Valery P.; Liakumovich, Alexandr G.; Sobolev, Valerian M.; Korotkevich, Boris S.; Shmuk, Jury A.; and Mandelshtamm, Elena Y., 4,270,016, Cl. 585-366.000.

Shaw, Anthony R.: *See*—
Krueger, Wallace F.; Shaw, Anthony R.; and Smith, Jerry L., 4,269,173, Cl. 126-450.000.

Shaw, Douglas W.; and Gamwell, Richard, to E. T. Oakes Limited. Jointing of pipes. 4,269,437, Cl. 285-109.000.

Shears, W. Allan, to Fiat-Allis Construction Machinery, Inc. Resilient rear suspension for graders. 4,269,433, Cl. 280-716.000.

Shell Oil Company: *See*—
Keasling, Hugh H., 4,269,840, Cl. 424-253.000.
Keasling, Hugh H., 4,269,841, Cl. 424-253.000.
Kortbeek, Andras G. T. G.; and van der Linden-Lemmers, Wilhelmina J. M., 4,269,732, Cl. 252-429.00B.

Shelstad, Keith L., to Sunoco Energy Development Co. Apparatus for controlling the dispersion of coal fines into the atmosphere. 4,269,614, Cl. 55-385.00R.

Shelton, John J.: *See*—
Burns, James W.; and Shelton, John J., 4,269,140, Cl. 118-665.000.

Shemenski, Robert M., Sr., to Goodyear Tire & Rubber Company, The. Aromatic triazoles and alkylamine borates for increased surface protection and improved adhesion of brass-coated steel to rubber. 4,269,645, Cl. 156-124.000.

Shemenski, Robert M., Sr., to Goodyear Tire & Rubber Company, The. Aromatic triazole, precipitation compound and oxidizing compound for increased surface protection and improved adhesion of brass coated steel to rubber. 4,269,877, Cl. 427-327.000.

Shenoi, Kishan; and Agrawal, Bhagwati P., to International Telephone and Telegraph Corporation. Interpolator apparatus for increasing the word rate of a digital signal of the type employed in digital telephone systems. 4,270,026, Cl. 179-15.55R.

Shenoi, Kishan: *See*—
Agrawal, Bhagwati P.; and Shenoi, Kishan, 4,270,027, Cl. 179-81.00R.

Shephard, Margaret C.: *See*—
Worthington, Paul A.; and Shephard, Margaret C., 4,269,845, Cl. 424-269.000.

Sherwin-Williams Company, The: *See*—
Carr, Richard P.; Nanda, Ashok K.; Schneider, Charles A.; and Malhotra, Girish K., 4,269,987, Cl. 548-257.000.

Shibata, Hidehiro: *See*—
Takeuchi, Takeshi; Takamura, Hisao; Takatsu, Kiyoshi; and Shibata, Hidehiro, 4,269,633, Cl. 148-6.210.

Shibatani, Kyoichiro: *See*—
Yano, Makoto; Shimada, Kiyoo; Shibatani, Kyoichiro; and Makimoto, Tsutomu, 4,269,682, Cl. 204-195.00M.

Shibazaki, Kenji: *See*—
Ito, Masazumi; Shibazaki, Kenji; and Kitagawa, Tsuneo, 4,269,500, Cl. 355-14.00C.

Shibuya, Tsunenori, to Diesel Kiki Co., Ltd. Vane compressor with reticulate or porous separator element and fluid guide means therein. 4,269,576, Cl. 418-97.000.

Shibuya, Yoshimichi; Kawamura, Hiromitsu; Kando, Yasuhiko; and Koyama, Masaharu, to Hitachi, Ltd. Process for the manufacture of liquid crystal display element. 4,269,617, Cl. 65-43.000.

Shigekusa, Hisashi: *See*—
Minami, Takehiro; and Shigekusa, Hisashi, 4,269,367, Cl. 242-7.080.

Shihabi, David S.: *See*—
Chen, Nai Y.; and Shihabi, David S., 4,269,697, Cl. 208-120.000.

Shikutani, Michio; and Akiyama, Satoshi, to Kabushiki Kaisha Shikutani. Blowing apparatus. 4,269,571, Cl. 417-234.000.

Shilling, Jack W.: *See*—
Foster, Karl; and Shilling, Jack W., 4,269,634, Cl. 148-120.000.

Shima, Eiji; Shimizu, Masao; and Den, Hiroshi, to FEPS International, Ltd.; and Fujijura Cable Works, The. Flat type cable suspension structure. 4,269,380, Cl. 248-74.00R.

Shimada, Kiyoo: *See*—
Yano, Makoto; Shimada, Kiyoo; Shibatani, Kyoichiro; and Makimoto, Tsutomu, 4,269,682, Cl. 204-195.00M.

Shimano Industrial Company, Limited: *See*—
Nagano, Masashi, 4,269,601, Cl. 474-82.000.
Okajima, Shinpei, 4,269,084, Cl. 74-594.600.

Shimazawa, Yoichi; and Kawamoto, Toshiaki, to Sharp Kabushiki Kaisha. Ink supply device for an ink jet printer. 4,270,133, Cl. 346-140.00R.

Shimizu, Akira: *See*—
Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, 4,269,502, Cl. 355-35.00H.

Shimizu, Masao: *See*—
Ichimiya, Yoshichika; Sudo, Tsuneta; Maruyama, Hiromi; Sugamori, Shigeru; Sumida, Susumu; Shimizu, Masao; and Wakita, Toshiaki, 4,270,116, Cl. 340-146.200.
Shima, Eiji; Shimizu, Masao; and Den, Hiroshi, 4,269,380, Cl. 248-74.00R.

Shimizu, Sakayu: *See*—
Yamada, Hideaki; Shimizu, Sakayu; and Tani, Yoshiki, 4,269,942, Cl. 435-193.000.

Shimokawa, Ryushi: *See*—
Shiozawa, Kazuo; Yagi, Michio; Suzuki, Kijiro; Aratame, Kazuhisa; Shimokawa, Ryushi; and Ishihara, Haruji, 4,269,494, Cl. 354-60.00L.

Shimokawa, Yoshiyuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Microprocesor-based programmable logic controller. 4,270,184, Cl. 364-900.000.

Shingu, Tadashi: *See*—
Suzuki, Kazuyoshi; Takahashi, Teruo; Shingu, Tadashi; Naka, Kiyomi; and Horike, Akihiro, 4,269,931, Cl. 430-271.000.

Shinoda, Masaichi: *See*—
Toyokura, Nobuo; Tokunaga, Hiroshi; Inoue, Shinichi; Ishikawa, Hajime; and Shinoda, Masaichi, 4,270,136, Cl. 357-23.000.

Shinozaki, Nobuo: *See*—
Ogihara, Masuo; Chimura, Kozo; Shinozaki, Nobuo; and Seki, Yoichi, 4,270,195, Cl. 368-74.000.

Shinozaki, Toshiaki: *See*—
Wada, Hirotsugu; and Shinozaki, Toshiaki, 4,269,653, Cl. 156-644.000.

Shinsei Reizo Kogyo Kabushiki Kaisha: *See*—
Koide, Fumiharu; and Ohshima, Masami, 4,269,036, Cl. 62-159.000.

Shintani, Kenji, to Sony Corporation. Multi-axis movable mirror device. 4,269,486, Cl. 350-486.000.

Shionogi & Co., Ltd.: *See*—
Mitsuru, Yoshioka; Teruji, Tsuji; Yasuhiro, Nishitani; and Wataru, Nagata, 4,269,773, Cl. 260-245.400.

Shiozawa, Kazuo; Yagi, Michio; Suzuki, Kijiro; Aratame, Kazuhisa; Shimokawa, Ryushi; and Ishihara, Haruji. Battery level warning device. 4,269,494, Cl. 354-60.00L.

Shipley, Randall S., to Dow Chemical Company, The. Ultra high efficiency catalyst for polymerizing olefins. 4,269,733, Cl. 252-429.00C.

Shirai, Koichi: *See*—
Arai, Eisuke; Kamei, Kuniaki; Kawasaki, Akio; Takagi, Fumio; Shirai, Koichi; and Orihara, Yasuharu, 4,269,650, Cl. 156-540.000.

Shiraishi, Makoto: *See*—
Maruyama, Hitoshi; Kajitani, Koichi; and Shiraishi, Makoto, 4,269,729, Cl. 252-316.000.

Shirose, Toshihiro: *See*—
Nishizawa, Kazunori; Shirose, Toshihiro; and Itoh, Osamu, 4,269,188, Cl. 128-287.000.

Shmuk, Jury A.: *See*—
Tolstikov, Genrikh A.; Dzhemilev, Usein M.; Rutman, Grigory I.; Michurov, Jury I.; Pantukh, Boris I.; Shavanov, Stanislav S.; Rafikov, Sagid R.; Egoricheva, Sofia A.; Juriev, Valery P.; Liakumovich, Alexandr G.; Sobolev, Valerian M.; Korotkevich, Boris S.; Shmuk, Jury A.; and Mandelshtamm, Elena Y., 4,270,016, Cl. 585-366.000.

Shoemaker, Bruce F.: *See*—
Strimple, Robert A.; Snyder, Joseph E.; and Shoemaker, Bruce F., 4,269,397, Cl. 266-44.000.

Shoup, Floyd K.: *See*—
Rao, Ganta V.; and Shoup, Floyd K., 4,269,766, Cl. 260-112.00G.

Showa Highpolymer Co., Ltd.: *See*—
Morohashi, Yasushi; Komatsu, Yasuji; Hanyuda, Toshiaki; Takiyama, Eiichiro; Horishima, Tohei; and Sugimoto, Kenji, 4,269,869, Cl. 427-54.100.

Shtrikman, Mikhail M.: *See*—
Grinin, Vladimir V.; and Shtrikman, Mikhail M., 4,270,037, Cl. 219-125.120.

Shupe, Russell D.; and Maddox, Jim, Jr., to Texaco Inc. Emulsion oil recovery process usable in high temperature, high salinity formations. 4,269,271, Cl. 166-274.000.

Sichel, Burton F. Ball holder. 4,269,338, Cl. 224-242.000.

Siebtechnik GmbH: *See*—
Bruderlein, Johannes, 4,269,703, Cl. 209-243.000.

Siegel, William J.; Lee, Walter; and Vella, Alexander J., to Pace Incorporated. Desolderer and heater assembly for use therewith. 4,269,343, Cl. 228-20.000.

Siegert, Heiner: *See*—
Neuenfeldt, Walter; Siegert, Heiner; and Zeitzschel, Gunter, 4,269,660, Cl. 176-30.000.

Siemens Aktiengesellschaft: *See*—
Beyer, Johann; and Strauber, Friedrich, 4,269,176, Cl. 128-24.00A.
Feldtkeller, Ernst, 4,269,483, Cl. 350-390.000.
Flothmann, Detlev; Ruell, Hartwig; and Staimer, Angelika, 4,269,473, Cl. 350-3.610.
Gross, Franz, 4,270,070, Cl. 315-3.500.
Immler, Josef, 4,270,166, Cl. 363-89.000.
Krueger, Hans; Schauer, Alois; and Walter, Karl-Heinz, 4,269,480, Cl. 350-355.000.
Schlichte, Max, 4,270,211, Cl. 375-107.000.
Schuegraf, Eberhard, 4,270,107, Cl. 333-249.000.
Thye, Jurgen; and Hoffner, Karl, 4,270,019, Cl. 174-32.000.
Wiehler, Wolf, 4,270,069, Cl. 315-3.500.

Siemens-Allis, Inc.: *See*—
Glandorf, Frank J.; Wagner, Paul D.; and Keuper, John J., 4,270,064, Cl. 310-90.000.

Sierra Designs, Inc.: *See*—
Marks, George R., 4,269,210, Cl. 135-1.00R.

Sifford, Bruce M.; and Magill, D. Thomas, to Ricoh Company, Ltd. Complex ternary correlator and method for adaptive gradient computation. 4,270,179, Cl. 364-724.000.

Sih, John C., to Upjohn Company, The. 19-Hydroxy-19-methyl-6-oxo-PGF_1 amides. 4,269,779, Cl. 260-404.000.

Sih, John C., to Upjohn Company, The. 13,14-Dihydro-inter-phenylene-11-deoxy-19-oxo-PGE_1 compounds. 4,269,994, Cl. 560-53.000.

Sih, John C., to Upjohn Company, The. 19,20-Didehydro-13,14-dihydro-PG_2 compounds. 4,269,995, Cl. 560-121.000.

Sih, John C., to Upjohn Company, The. 19-Hydroxy-cis-4,5-didehydro-PG_1 analogs. 4,269,996, Cl. 560-121.000.

Silk, Murray R.; and Cleveland, Richard T., to Mobil Oil Corporation. Reclaiming wax contaminated lubricating oils. 4,269,695, Cl. 208-111.000.

Simmering-Graz-Pauker Aktiengesellschaft fur Maschinen-, Kessel- und Waggonbau: *See*—
Entzmann, Karl, 4,269,363, Cl. 241-30.000.

Simmonds, Milo R.: *See*—
Sullivan, John L.; Georgini, Eugene A.; and Simmonds, Milo R., 4,269,216, Cl. 137-102.000.

Simmons, Albert: *See*—
Powell, Gordon F. W.; Bolt, Reginald C.; and Simmons, Albert, 4,269,201, Cl. 131-280.000.

Simmons, William F. Variable fuel explosion chamber engine. 4,269,161, Cl. 123-620.000.

Simon, David J.: *See*—
Gronner, Alfred D.; and Simon, David J., 4,270,061, Cl. 307-270.000.

Simonek, Rudiger; Gumm, Peter; Idstein, Hermann; and Witte, Horst, to Hoechst Aktiengesellschaft. Original document transport mechanism for electrophotographic copying machines. 4,269,409, Cl. 271-277.000.

Singer Company, The: *See*—
Duckworth, James J.; and Glennon, William J., 4,270,074, Cl. 318-254.000.
Gronner, Alfred D.; and Simon, David J., 4,270,061, Cl. 307-270.000.
Minnich, George E., 4,268,979, Cl. 434-46.000.
Prill, Robert S., 4,270,120, Cl. 340-347.0SY.
Tullman, Edward J., 4,269,129, Cl. 112-257.000.

Sink, William H.: *See*—
Flotow, Richard A.; and Sink, William H., 4,269,296, Cl. 192-106.200.

Sinloihi Company Limited: *See*—
Wakimoto, Saburo; Miyahara, Sadayasu; and Hyosu, Yoshihiko, 4,269,760, Cl. 260-42.530.

SIPSY: *See*—
Torossian, Dieran R.; and Aubard, Gilbert G., 4,269,778, Cl. 260-397.450.

Sisti, Giorgio; Trestianu, Sorin; and Galli, Mario, to Carlo Erba Strumentazione S.p.A. Method and device for sample injection under controlled conditions of temperature profile into gas chromatographic columns. 4,269,608, Cl. 55-67.000.

Sivachenko, Eugene W.; Larkin, Artemas M.; and Bernert, Bogdan W., to Sivachenko, Eugene W. Large profile sheet metal corrugator. 4,269,055, Cl. 72-180.000.

Skarvada, Thomas, to Crane Co. Digital wheel speed sensor. 4,270,176, Cl. 364-565.000.

Skinner, Robert T. J., to Lucas Industries Limited. Engine system. 4,269,159, Cl. 123-569.000.

Skradski, Frank L.: *See—*
Wechsler, Joseph R.; Baker, Thomas G.; Battaglini, George T.; and Skradski, Frank L., 4,269,730, Cl. 252-356.000.

Skuteng A/S: *See—*
Hauan, Nils F., 4,269,538, Cl. 405-63.000.

Sloboda, Adolph E.: *See—*
Tomcufcik, Andrew S.; and Sloboda, Adolph E., 4,269,832, Cl. 424-244.000.

Slovinsky, Manuel, to Nalco Chemical Company. Boiler additives for oxygen scavenging. 4,269,717, Cl. 210-750.000.

Smirl, Richard A., to Zenith Radio Corporation. Continuous tune all-channel selector. 4,270,218, Cl. 455-176.000.

Smith, Clark K.; and Staley, Harry W. Combination log cutter, splitter and bundler. 4,269,242, Cl. 144-192.000.

Smith, Craig G., to Bell Telephone Laboratories, Incorporated. Electrode for electrochemical processes. 4,269,670, Cl. 204-15.000.

Smith, Dennis A., to Fisons Limited. 6,7,8,9-Tetrahydro-4H-naphtho-[2,3-b]pyran-2-carboxylic acids. 4,269,854, Cl. 424-283.000.

Smith, Eileen; and Morgan, David A., to Laporte Industries Limited. Washing compositions. 4,269,725, Cl. 252-174.250.

Smith, Forrest D. Toothpick holder and dispenser. 4,269,313, Cl. 206-380.000.

Smith, Jerry L.: *See—*
Krueger, Wallace F.; Shaw, Anthony R.; and Smith, Jerry L., 4,269,173, Cl. 126-450.000.

Smith Kline & French Laboratories Limited: *See—*
Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., 4,269,844, Cl. 424-263.000.

Smith, Norman: *See—*
Strandell, Per O.; Thorslund, Erik M.; MacKenzie, Colin R.; and Smith, Norman, 4,268,948, Cl. 29-527.600.

Smitley, Marion L., to Colt Industries Operating Corp. Method for gauging fluid flow. 4,269,062, Cl. 73-118.000.

Snowden, James E., Jr. Method for the on-site determination of the presence of corrosive material in lubricating oil. 4,269,604, Cl. 23-230.0HC.

Snyder, Joseph E.: *See—*
Strimple, Robert A.; Snyder, Joseph E.; and Shoemaker, Bruce F., 4,269,397, Cl. 266-44.000.

Sobolev, Valerian M.: *See—*
Tolstikov, Genrikh A.; Dzhemilev, Usein M.; Rutman, Grigory I.; Michurov, Jury I.; Pantukh, Boris I.; Shavanov, Stanislav S.; Rafikov, Sagid R.; Egoricheva, Sofia A.; Juriev, Valery P.; Liakumovich, Alexandr G.; Sobolev, Valerian M.; Korotkevich, Boris S.; Shmuk, Jury A.; and Mandelshtamm, Elena Y., 4,270,016, Cl. 585-366.000.

Sobotka, Frank. Roller skate carrier. 4,269,337, Cl. 294-163.000.

Soby, William; and Johnston, Samuel J. B., to EMI Limited. High speed electroplating. 4,269,669, Cl. 204-5.000.

Sochard, Irving I., to United States of America, Navy. Semi-active optical fuzing. 4,269,121, Cl. 102-213.000.

Societe Anonyme de Telecommunications: *See—*
Le Nevez, Yves F., 4,269,508, Cl. 356-249.000.

Societe Anonyme Francaise du Ferodo: *See—*
Labrande, Jean-Paul, 4,269,267, Cl. 165-181.000.

Societe Chimique des Charbonnages - CdF CHIMIE: *See—*
Nicco, Adrien, 4,269,948, Cl. 525-53.000.

Societe D'Applications de Procedes Industriels et Chimiques S.A.P.I.C.: *See—*
Richard, Gerard Y., 4,269,758, Cl. 260-38.000.

Societe Franco-Belge des Laminoirs et Trefileries d'Anvers "Lamitref": *See—*
Vervliet, Rene, 4,269,344, Cl. 228-125.000.

Soder, Jorg M.: *See—*
Fitzky, Hans G.; Soder, Jorg M.; Schmitt, Franz; Bollongino, Norbert; and Rehrmann, Helmut, 4,270,083, Cl. 324-58.50C.

Solid Photography Inc.: *See—*
DiMatteo, Paul L.; Ross, Joseph A.; and Stern, Howard K., 4,269,513, Cl. 356-376.000.

Solow, Benjamin: *See—*
Sease, D. Lamar; Solow, Benjamin; Boeckmann, Eduard F.; and Rabinow, David, 4,268,954, Cl. 29-620.000.

Somers, Alphonse: *See—*
Janssens, Wilhelmus; Somers, Alphonse; and Claeys, Daniel A., 4,269,924, Cl. 430-214.000.

Sommer, Rolf; Schweinfurth, Gustav; and Ungerer, Heinz-Jurgen, to Saint-Gobain Industries. Process for the preparation of a composite mat consisting of a layer of mineral wool and a layer of steel wool. 4,269,800, Cl. 264-111.000.

Sondermann, Thomas, to Reaktor-Brennelment Union GmbH. Method of decontaminating radioactive process waste waters. 4,269,706, Cl. 210-682.000.

Sonderskov, Rasmus J.: *See—*
Seilly, Alec H.; and Sonderskov, Rasmus J., 4,269,388, Cl. 251-138.000.

Sonntag, Heinrich; and Wallasch, Helmut. Core for molds for electrically melting metals for casting hollow ingots. 4,269,258, Cl. 164-252.000.

Sonobe, Kazuo; and Kato, Takeo, to Isolite Babcock Refractories Co., Ltd. Ceramic fiber felt. 4,269,887, Cl. 428-280.000.

Sony Corporation: *See—*
Shintani, Kenji, 4,269,486, Cl. 350-486.000.
Suzuki, Tadahiko; and Ikeda, Yasunari, 4,270,216, Cl. 455-159.000.

Sorensen, Finn L.; and Neubert, Robert, to Clean-Tex A/S. Method and apparatus for cleaning rugs and mats. 4,268,929, Cl. 8-151.000.

Sorenson, Marius W.: *See—*
Ezzell, Bobby R.; and Sorenson, Marius W., 4,269,675, Cl. 204-98.000.

Sorenson Research Co., Inc.: *See—*
Reynolds, Gordon S.; and Todd, Robert J., 4,269,387, Cl. 251-122.000.

Sornsin, Earl W.: *See—*
Schultz, Gene, 4,269,535, Cl. 404-117.000.

Sorrentino, Vincent P., to Bright Industries Inc. Coupling for furniture and the like. 4,269,532, Cl. 403-191.000.

Soukup, Dale F.: *See—*
Saarem, Myrl J.; Lovelace, Donald E.; Firebaugh, Dale C.; and Soukup, Dale F., 4,269,229, Cl. 137-869.000.

Souriau & Cie: *See—*
Audic, Bernard, 4,269,469, Cl. 339-177.00R.

South African Inventions Development Corp.: *See—*
Wedlake, Roger J., 4,269,905, Cl. 429-8.000.

Spakman, Geert: *See—*
Bentlage, Bernardus W. J.; and Spakman, Geert, 4,270,225, Cl. 455-347.000.

Spees, John A.: *See—*
Meginnis, George B.; and Spees, John A., 4,269,032, Cl. 60-754.000.

Speiser, Peter P.: *See—*
Kreuter, Jorg; and Speiser, Peter P., 4,269,821, Cl. 424-19.000.

Speiser, Peter Paul: *See—*
Kreuter, Jorg; and Speiser, Peter P., 4,269,821, Cl. 424-19.000.

Sperry Corporation: *See—*
Davis, William W.; and Griffith, Ernest S., 4,270,214, Cl. 455-80.000.
Duncan, Damon H., 4,269,072, Cl. 74-5.00F.
Flannery, William E., 4,270,186, Cl. 365-15.000.
Herper, John C.; and Stangel, John J., 4,270,129, Cl. 343-703.000.
Swartz, Harold L.; and Buemi, Joseph M., Jr., 4,270,077, Cl. 318-661.000.

Spiegelman, Gerald; and Liauw, Koei-Liang, to Argus Chemical Corporation. Preparation of mixtures of methyltin trichloride and dimethyltin dichloride from stannic chloride and dimethyltin dichloride. 4,269,782, Cl. 260-429.700.

Spiller, Eberhard A.: *See—*
Gaensslen, Fritz H.; and Spiller, Eberhard A., 4,268,952, Cl. 29-571.000.

Splinter, Michael R.: *See—*
Elliott, Michael T.; Splinter, Michael R.; Jones, Addison B.; and Reekstin, John P., 4,268,951, Cl. 29-571.000.

Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Use of 1,3,5,5-Tetramethyl-2-oxabicyclo[2.2.2]octane in augmenting or enhancing the aroma or taste of foodstuffs. 4,269,862, Cl. 426-536.000.

Springer, Helmut: *See—*
Weber, Jurgen; Bernhagen, Wolfgang; and Springer, Helmut, 4,270,008, Cl. 568-448.000.

Spruiell, Walter L. Centrifugal pump for abrasive liquids. 4,269,566, Cl. 415-112.000.

Spuhl AG: *See—*
Spuhl, Walter, 4,269,300, Cl. 198-379.000.

Spuhl, Walter, to Spuhl AG. Method and apparatus for separating helical springs closed by knots at their winding ends. 4,269,300, Cl. 198-379.000.

SRI International: *See—*
De Graw, Joseph I.; Lawson, John A.; Johnson, Howard L.; and Loew, Gilda H., 4,269,843, Cl. 424-260.000.
Eckerle, Joseph S., 4,269,193, Cl. 128-672.000.

Srinivasan, Gurumakonda R.: *See—*
Anantha, Narasipur G.; and Srinivasan, Gurumakonda R., 4,269,631, Cl. 148-1.500.

Staffieri, Lamberto. Thigh prosthesis. 4,268,923, Cl. 3-22.000.

Staimer, Angelika: *See—*
Flothmann, Detlev; Ruell, Hartwig; and Staimer, Angelika, 4,269,473, Cl. 350-3.610.

Stal-Laval Turbin AB: *See—*
Bojesgard, Pehr; Kullendorff, Anders; and Wikner, Jan, 4,269,151, Cl. 122-4.00D.

Staley, Harry W.: *See—*
Smith, Clark K.; and Staley, Harry W., 4,269,242, Cl. 144-192.000.

Stamicarbon B.V.: *See—*
Pastormerlo, Primo, 4,269,997, Cl. 564-73.000.

Standard Oil Company: *See—*
Landis, Norris J., 4,269,667, Cl. 203-76.000.
Wysocki, Carl G., 4,269,666, Cl. 203-15.000.

Standard Oil Company (Indiana): *See—*
Klotz, Marvin R., 4,269,813, Cl. 423-277.000.

Stangel, John J.: *See—*
Herper, John C.; and Stangel, John J., 4,270,129, Cl. 343-703.000.

Statics, Inc.: *See—*
Testone, Anthony Q., 4,268,934, Cl. 15-306.00B.

Stauffer Chemical Company: *See—*
Chirafisi, Dominick J.; and Melachouris, Nicholas, 4,269,864, Cl. 426-583.000.
Felix, Raymond A., 4,269,984, Cl. 548-142.000.
Felix, Raymond A., 4,269,988, Cl. 548-263.000.
Mueller, Klaus W.; and Olsen, Norman R., 4,269,721, Cl. 252-88.000.

Pallos, Ferenc M.; Brokke, Mervin E.; and Arneklev, Duane R., 4,269,618, Cl. 71-88.000.
Teach, Eugene G., 4,269,986, Cl. 548-215.000.
Stechmann, Helmut; and Haberer, Jens, to Kienzle Uhrenfabriken GmbH. Timed chime system. 4,270,200, Cl. 368-252.000.
Stedman, Robert C.: *See*—
Charles, Roger D.; Charles, Earl, Jr.; and Stedman, Robert C., 4,269,565, Cl. 415-76.000.
Steelastic Company, The: *See*—
Vanderzee, Robert S., 4,269,649, Cl. 156-416.000.
Stefan, Gunther: *See*—
Kroll, Walter; and Stefan, Gunther, 4,269,584, Cl. 425-313.000.
Steinberg, Albert H.: *See*—
DellaVecchia, Michael P.; Mackey, Joseph E.; and Steinberg, Albert H., 4,269,884, Cl. 428-131.000.
Steinmaier, Dieter. Microphone mixer with predistortion indication. 4,270,151, Cl. 360-31.000.
Stemme, Walter, to Braun AG. Battery mounting chamber for a pocket calculator. 4,269,908, Cl. 429-98.000.
Stenudd, Kurt G.: *See*—
Bramberger, Bo C.; and Stenudd, Kurt G., 4,269,283, Cl. 181-207.000.
Stenzenberger, Horst, to Technochemie GmbH Verfahrenstechnik. Polyimide prepolymer, polyimide resin from imide acid chloride and diamine. 4,269,966, Cl. 528-322.000.
Stepan Chemical Company: *See*—
Wechsler, Joseph R.; Baker, Thomas G.; Battaglini, George T.; and Skradski, Frank L., 4,269,730, Cl. 252-356.000.
Stephens, Frederick N.; and Stephens, Joseph L., to Stephens Systems, Inc. Worksheet presenting apparatus. 4,269,403, Cl. 271-3.000.
Stephens, Joseph L.: *See*—
Stephens, Frederick N.; and Stephens, Joseph L., 4,269,403, Cl. 271-3.000.
Stephens Systems, Inc.: *See*—
Stephens, Frederick N.; and Stephens, Joseph L., 4,269,403, Cl. 271-3.000.
Stephenson, George M.; and Colucci, William, to Stephenson, George M. Two-step process and composition for cleaning polished surfaces. 4,269,630, Cl. 134-26.000.
Sterling Drug Inc.: *See*—
Ferrari, Richard A.; and Beyler, Arthur L., 4,269,831, Cl. 424-241.000.
Stern, Howard K.: *See*—
DiMatteo, Paul L.; Ross, Joseph A.; and Stern, Howard K., 4,269,513, Cl. 356-376.000.
Stevens, Albert: *See*—
McMullan, James P.; and Stevens, Albert, 4,270,040, Cl. 219-528.000.
Stevens, Violete L.: *See*—
Atchison, George J.; McEwen, Gerald K.; and Stevens, Violete L., 4,269,727, Cl. 252-188.30R.
Stock, Gert: *See*—
Hock, Franz; Dopper, Franz-Herbert; and Stock, Gert, 4,269,701, Cl. 209-23.000.
Stokes, Kenneth B., to Medtronic, Inc. Body implantable lead. 4,269,198, Cl. 128-785.000.
Stoner, Eugene M., to ARES, Inc. Programmed shell casing ejector apparatus for automatic cannon. 4,269,108, Cl. 89-33.00R.
Stoner, Eugene M., to ARES, Inc. Open-framework receiver automatic cannon. 4,269,109, Cl. 89-198.000.
Strahm, Christian; and Gageur, Fritz, to Lindauer Dornier Gesellschaft mbH. Externally held cylindrical spreading means for tubular fabric. 4,269,046, Cl. 68-13.00R.
Straitz, John F., III, to Combustion Unlimited Incorporated. Pilots for flare stacks. 4,269,583, Cl. 431-202.000.
Strandell, Per O.; Thorslund, Erik M.; MacKenzie, Colin R.; and Smith, Norman, to British Steel Corp. Parting device. 4,268,948, Cl. 29-527.600.
Strangio, Francis J.: *See*—
Ingber, Lawrence K.; and Strangio, Francis J., 4,269,090, Cl. 82-1.00C.
Strauber, Friedrich: *See*—
Beyer, Johann; and Strauber, Friedrich, 4,269,176, Cl. 128-24.00A.
Strausburg, Larry D., to Monarch Marking Systems, Inc. Setting knobs for selective print head. 4,269,119, Cl. 101-111.000.
Strelow, John L.: *See*—
Forsythe, Calvin C.; Strelow, John L.; and Clift, Miner E., 4,269,214, Cl. 137-68.00R.
Striffler, Eugene, Jr.; and Kolakowski, Michael A., to NL Industries, Inc. Production of lead monoxide from lead sulfate with acetic acid. 4,269,811, Cl. 423-92.000.
Strimple, Robert A.; Snyder, Joseph E.; and Shoemaker, Bruce F., to Bethlehem Steel Corporation. Method for measuring the thickness of a refractory in a metallurgical apparatus. 4,269,397, Cl. 266-44.000.
Strobel, Gerhard, to Klockner-Humboldt-Deutz AG. Tedding attachment for rotary harvesting mower. 4,269,019, Cl. 56-192.000.
Stroup, Steven L., to Crown Unlimited Machines, Inc. Power driven dereeler with strand tension-sensing device. 4,269,369, Cl. 242-45.000.
Strzelecki, Henryk: *See*—
Libus, Wlodzimierz; Kluczkowski, Marek; Pilarczyk, Michal; Strzelecki, Henryk; Pastewski, Roman; and Grzybkowski, Waclaw, 4,269,676, Cl. 204-107.000.
Stuttard, Edward B.; Blackwell, John E.; and Chao, Jessie, to Racal-Milgo, Inc. Modem with automatic port reconfiguration apparatus. 4,270,202, Cl. 370-80.000.
Su, Tsung-Yuan, to Union Carbide Corporation. Use of organotitanate in the encapsulation of electrical components. 4,269,756, Cl. 260-37.00R.
Sudo, Hisashi, to Kubota Ltd. Rotary valve. 4,269,218, Cl. 137-240.000.
Sudo, Tsuneta: *See*—
Ichimiya, Yoshichika; Sudo, Tsuneta; Maruyama, Hiromi; Sugamori, Shigeru; Sumida, Susumu; Shimizu, Masao; and Wakita, Toshiaki, 4,270,116, Cl. 340-146.200.
Suechting, Henry W.: *See*—
deBuhr, Harold E.; and Suechting, Henry W., 4,269,017, Cl. 56-106.000.
Sugamori, Shigeru: *See*—
Ichimiya, Yoshichika; Sudo, Tsuneta; Maruyama, Hiromi; Sugamori, Shigeru; Sumida, Susumu; Shimizu, Masao; and Wakita, Toshiaki, 4,270,116, Cl. 340-146.200.
Sugimoto, Kenji: *See*—
Morohashi, Yasushi; Komatsu, Yasuji; Hanyuda, Toshiaki; Takiyama, Eiichiro; Horishima, Tohei; and Sugimoto, Kenji, 4,269,869, Cl. 427-54.100.
Sugizaki, Atsushi: *See*—
Arai, Atsuaki; Oishi, Yasushi; Nakazyo, Kiyoshi; Sugizaki, Atsushi; and Okumura, Akio, 4,269,936, Cl. 430-389.000.
Suhoza, Richard A., to R. T. Vanderbilt Company, Inc. Alkylnaphthalene sulfonic acid salts as filler deactivators in polyolefins. 4,269,761, Cl. 260-45.70S.
Sullivan, Carl M., to Goodyear Tire & Rubber Company, The. Low density high resiliency foams. 4,269,946, Cl. 521-163.000.
Sullivan, John L.; Georgini, Eugene A.; and Simmonds, Milo R., to A-T-O Inc. Pressure demand valve system. 4,269,216, Cl. 137-102.000.
Sumida, Susumu: *See*—
Ichimiya, Yoshichika; Sudo, Tsuneta; Maruyama, Hiromi; Sugamori, Shigeru; Sumida, Susumu; Shimizu, Masao; and Wakita, Toshiaki, 4,270,116, Cl. 340-146.200.
Sumimoto, Takashi: *See*—
Inoue, Hitoshi; Watanabe, Kenichi; and Sumimoto, Takashi, 4,269,432, Cl. 280-690.000.
Sumitomo Chemical Company, Limited: *See*—
Kirino, Osamu; Hashimoto, Shunichi; Matsumoto, Hiroshi; and Oshio, Hiromichi, 4,270,002, Cl. 564-221.000.
Sun Electric Corporation: *See*—
Karlin, Richard A.; and Koskinen, Carl J., 4,270,174, Cl. 364-551.000.
Kostecki, Raymond T., 4,270,080, Cl. 320-24.000.
Sunnen Products Company: *See*—
Rutter, Harold T., 4,269,000, Cl. 51-165.740.
Sunoco Energy Development Co.: *See*—
Shelstad, Keith L., 4,269,614, Cl. 55-385.00R.
Sutter, Leroy V., Jr.: *See*—
Griffith, Glen A.; and Sutter, Leroy V., Jr., 4,269,501, Cl. 354-323.000.
Suttler, Henry G. Electronic scaler. 4,270,173, Cl. 364-523.000.
Suzuki, Hiroshi: *See*—
Inoue, Sadao; Umemura, Tetsuya; Suzuki, Hiroshi; and Kuroyanagi, Takashi, 4,269,623, Cl. 75-157.500.
Suzuki, Kazuyoshi; Takahashi, Teruo; Shingu, Tadashi; Naka, Kiyomi; and Horike, Akihiro, to Teijin Limited. Supports for printing plates. 4,269,931, Cl. 430-271.000.
Suzuki, Kijiro: *See*—
Shiozawa, Kazuo; Yagi, Michio; Suzuki, Kijiro; Aratame, Kazuhisa; Shimokawa, Ryushi; and Ishihara, Haruji, 4,269,494, Cl. 354-60.00L.
Suzuki, Masahiro. Method of producing hydrogen. 4,269,818, Cl. 423-657.000.
Suzuki, Noboru: *See*—
Ichinose, Isao; Mori, Fumio; and Suzuki, Noboru, 4,269,321, Cl. 215-343.000.
Suzuki, Ryoichi; Kinoshita, Takao; Ogawa, Yukio; and Uchiyama, Takashi, to Canon Kabushiki Kaisha. Electromagnetic camera shutter control device. 4,269,493, Cl. 354-51.000.
Suzuki, Tadahiko; and Ikeda, Yasunari, to Sony Corporation. Tuning and volume indicator. 4,270,216, Cl. 455-159.000.
Suzuki, Yoshiaki: *See*—
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,269,926, Cl. 430-216.000.
Suzuki, Yoshihisa: *See*—
Ogawa, Koichi; Terasawa, Masatoshi; Iwata, Shizuo; Suzuki, Yoshihisa; and Tanakamaru, Hideki, 4,269,860, Cl. 426-5.000.
Suzuki, Yoshiki; and Noda, Seijiro, to Nippon Kogaku K.K. Accessory device for photographic camera. 4,269,498, Cl. 354-288.000.
Svec, Frantisek: *See*—
Kalal, Jaroslav; Bednar, Bohumil; Zachoval, Jaromir; Petr, Jiri; Pelcbauer, Zdenek; and Svec, Frantisek, 4,269,962, Cl. 526-273.000.
Swager, William E. Sliding clamp and adaptor. 4,269,284, Cl. 182-8.000.
Swanson, Kenneth H.: *See*—
Brolin, Stephen J.; Gottesman, Jeffrey L.; Morgen, Dennis H.; and Swanson, Kenneth H., 4,270,030, Cl. 179-175.20D.
Swartz, Harold L.; and Buemi, Joseph M., Jr., to Sperry Corporation. Demodulatorless synchro position sensor apparatus utilizing square wave excitation. 4,270,077, Cl. 318-661.000.
Swisstronics, Inc.: *See*—
Ingber, Lawrence K.; and Strangio, Francis J., 4,269,090, Cl. 82-1.00C.

Sygnator, Henry A., to Illinois Tool Works Inc. Extruding and tapping screw and blank for manufacture of such screw. 4,269,902, Cl. 428-577.000.

Szczepanski, Henry; Martin, Henry; Fory, Werner; and Pissiotas, Georg, to Ciba-Geigy Corporation. Oxime derivatives for protecting plant crops. 4,269,775, Cl. 260-340.700.

Tabar, Ronald J.; and Killgoar, Paul C., Jr., to Ford Motor Company. Compounding polychloroprene rubber. 4,269,746, Cl. 260-23.70H.

Tabuchi, Kenji: *See*—
Wada, Kenichi; Oka, Tateki; Tanaka, Susumu; and Tabuchi, Kenji, 4,269,920, Cl. 430-107.000.

Tadanier, John S.; and Martin, Jerry R., to Abbott Laboratories. 1,2-Carbamates of fortimicin B and derivatives. 4,269,970, Cl. 536-17.00R.

Taira, Tsuneo, to Rex Industries Co., Ltd. Pipe cutter. 4,268,959, Cl. 30-94.000.

Taisan Industrial Co., Ltd.: *See*—
Nozawa, Katsumi; and Nomura, Hideo, 4,269,572, Cl. 417-299.000.

Taisei Corporation: *See*—
Morohashi, Yasushi; Komatsu, Yasuji; Hanyuda, Toshiaki; Takiyama, Eiichiro; Horishima, Tohei; and Sugimoto, Kenji, 4,269,869, Cl. 427-54.100.

Taisho Pharmaceutical Co., Ltd.: *See*—
Yamagishi, Michio; Kawashima, Akira; Mizutani, Taku; Hara, Hiroshi; Mizoue, Kazutoshi; Omura, Sadafumi; Seto, Haruo; and Otake, Noboru, 4,269,971, Cl. 536-17.00R.

Takada, Juichiro. Passive vehicle occupant restraint lap and shoulder belt system. 4,269,434, Cl. 280-803.000.

Takagi, Fumio: *See*—
Arai, Eisuke; Kamei, Kuniaki; Kawasaki, Akio; Takagi, Fumio; Shirai, Koichi; and Orihara, Yasuharu, 4,269,650, Cl. 156-540.000.

Takagi, Sadaaki. Polyurethane cushion material and preparing the same. 4,269,889, Cl. 428-315.000.

Takagi, Tutomu: *See*—
Tokuda, Takuro; Ikeda, Susumu; Kubota, Yoshikazu; Takagi, Tutomu; and Kokagi, Yuuichi, 4,269,857, Cl. 424-325.000.

Takahara, Yoshiyuki: *See*—
Asagao, Soichi; Nakatani, Masaru; Nakagawa, Shinsuke; Takahara, Yoshiyuki; and Okada, Naoki, 4,269,814, Cl. 423-308.000.

Takahashi, Teruo: *See*—
Suzuki, Kazuyoshi; Takahashi, Teruo; Shingu, Tadashi; Naka, Kiyomi; and Horike, Akihiro, 4,269,931, Cl. 430-271.000.

Takai, Atsushi: *See*—
Hagiwara, Yoshimune; Sawase, Terumi; Takai, Atsushi; Kita, Yuzo; and Honda, Akira, 4,270,220, Cl. 455-182.000.

Takaiwa, Masakazu: *See*—
Yaguchi, Kunihide; Takaiwa, Masakazu; and Aoki, Minoru, 4,269,806, Cl. 422-171.000.

Takakura, Koichi: *See*—
Yamashita, Shuzo; Kawai, Syuji; Tanii, Hirokuni; and Takakura, Koichi, 4,269,713, Cl. 210-500.200.

Takami, Satoshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Programmed shutter gamma switching circuit. 4,269,490, Cl. 354-24.000.

Takamura, Hisao: *See*—
Takeuchi, Takeshi; Takamura, Hisao; Takatsu, Kiyoshi; and Shibata, Hidehiro, 4,269,633, Cl. 148-6.210.

Takatsu, Kiyoshi: *See*—
Takeuchi, Takeshi; Takamura, Hisao; Takatsu, Kiyoshi; and Shibata, Hidehiro, 4,269,633, Cl. 148-6.210.

Takeda Riken Kogyo Kabushikikaisha: *See*—
Ichimiya, Yoshichika; Sudo, Tsuneta; Maruyama, Hiromi; Sugamori, Shigeru; Sumida, Susumu; Shimizu, Masao; and Wakita, Toshiaki, 4,270,116, Cl. 340-146.200.
Mitamura, Masakazu, 4,270,119, Cl. 340-347.0NT.

Takeda, Yutaka; Aiki, Kunio; and Ito, Ryoichi, to Hitachi, Ltd. Light-emitting semiconductor device. 4,270,134, Cl. 357-19.000.

Takeshita, Kazuhide: *See*—
Mine, Katsutoshi; Maruyama, Tsuneo; and Takeshita, Kazuhide, 4,269,753, Cl. 260-33.4SB.
Mine, Katsutoshi; Maruyama, Tsuneo; and Takeshita, Kazuhide, 4,269,757, Cl. 260-37.0SB.

Takeuchi, Takeshi; Takamura, Hisao; Takatsu, Kiyoshi; and Shibata, Hidehiro, to Nisshin Steel Co., Ltd. Method for coloring stainless steel. 4,269,633, Cl. 148-6.210.

Takimoto, Hiroyuki, to Canon Kabushiki Kaisha. Camera and error preventing circuit therefor. 4,269,489, Cl. 352-174.000.

Takiyama, Eiichiro: *See*—
Morohashi, Yasushi; Komatsu, Yasuji; Hanyuda, Toshiaki; Takiyama, Eiichiro; Horishima, Tohei; and Sugimoto, Kenji, 4,269,869, Cl. 427-54.100.

Talbot, William J., Jr.: *See*—
Uyeda, Stanley T.; Radu, E. John; Talbot, William J., Jr.; and Feldman, Norman, 4,269,540, Cl. 405-168.000.

Tamura, Keiji: *See*—
Matsuda, Yoshiji; Tamura, Keiji; Motoki, Hiroaki; Kitame, Fumio; and Ishida, Nakao, 4,269,765, Cl. 260-112.00B.

Tamura, Munetaka; and Hatuse, Toshikazu. Electronic timepiece. 4,270,198, Cl. 368-220.000.

Tan, Yoichi; and Noda, Seiichi, to Nippon Electric Co., Ltd. Digital diversity receiver, comprising an APC loop for locking instants of read-out of buffer memories to an averaged phase of signals supplied thereto. 4,270,210, Cl. 375-100.000.

Tanaka, Haruo: *See*—
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; and Tanaka, Haruo, 4,269,838, Cl. 424-250.000.

Tanaka, Hiroaki: *See*—
Hagyuda, Nobuyoshi; and Tanaka, Hiroaki, 4,269,491, Cl. 354-25.000.

Tanaka, Hiroshi; and Tsuneda, Terukuni, to Canon Kabushiki Kaisha. Method for preventing degradation of a liquid developer for electrostatic recording. 4,269,921, Cl. 430-119.000.

Tanaka, Masanori: *See*—
Endoh, Kenjiro; Ishizawa, Yoshiyuki; Tanaka, Masanori; and Iwasaki, Koji, 4,270,177, Cl. 364-571.000.

Tanaka, Masaya; Ono, Mitsuo; and Degawa, Sadao, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Liquid leakage detection system. 4,270,049, Cl. 250-227.000.

Tanaka, Susumu: *See*—
Wada, Kenichi; Oka, Tateki; Tanaka, Susumu; and Tabuchi, Kenji, 4,269,920, Cl. 430-107.000.

Tanakamaru, Hideki: *See*—
Ogawa, Koichi; Terasawa, Masatoshi; Iwata, Shizuo; Suzuki, Yoshihisa; and Tanakamaru, Hideki, 4,269,860, Cl. 426-5.000.

Tanakura, Yoshiyuki; and Uchida, Keiichiro, to Fujitsu Limited. Data processing system having a high speed pipeline processing architecture. 4,270,181, Cl. 364-736.000.

Tani, Yoshiki: *See*—
Yamada, Hideaki; Shimizu, Sakayu; and Tani, Yoshiki, 4,269,942, Cl. 435-193.000.

Tanii, Hirokuni: *See*—
Yamashita, Shuzo; Kawai, Syuji; Tanii, Hirokuni; and Takakura, Koichi, 4,269,713, Cl. 210-500.200.

Tanno, Shoji: *See*—
Ohtani, Shigemori; and Tanno, Shoji, 4,269,358, Cl. 239-425.000.

Tasch, Al F., Jr.: *See*—
Chatterjee, Pallab K.; and Tasch, Al F., Jr., 4,268,950, Cl. 29-571.000.

Taylor, Lloyd D.: *See*—
Barton, Derek H. R.; Bronstein-Bonte, Irena Y.; and Taylor, Lloyd D., 4,269,925, Cl. 430-215.000.

Taylor, Warren A. Sign assembly. 4,268,984, Cl. 40-154.000.

Teach, Eugene G., to Stauffer Chemical Company. Hydroxyacetyl oxazolidine herbicidal antidotes. 4,269,986, Cl. 548-215.000.

Technicon Instruments Corporation: *See*—
Adler, Stanford L.; and Gordon, Abraham, 4,269,139, Cl. 118-642.000.

Technochemie GmbH Verfahrenstechnik: *See*—
Stenzenberger, Horst, 4,269,966, Cl. 528-322.000.

Technomatic AG: *See*—
Ruchser, Erich; and Ott, Helmut, 4,269,225, Cl. 137-596.160.

Tegel, Othmar: *See*—
Gill, Hardial S.; and Tegel, Othmar, 4,270,099, Cl. 331-96.000.

Teijin Limited: *See*—
Inata, Hiroo; Ogasawara, Makoto; Morinaga, Tsuto; and Norike, Akihiro, 4,269,947, Cl. 525-10.000.
Kuroda, Toshimasa; and Matsumoto, Mitsuo, 4,268,940, Cl. 28-255.000.
Suzuki, Kazuyoshi; Takahashi, Teruo; Shingu, Tadashi; Naka, Kiyomi; and Horike, Akihiro, 4,269,931, Cl. 430-271.000.

Teijin Seiki Company Limited: *See*—
Kamimura, Toshio, 4,269,111, Cl. 91-419.000.

Temafa Textilemaschinenfabrik GmbH: *See*—
Hock, Franz; Dopper, Franz-Herbert; and Stock, Gert, 4,269,701, Cl. 209-23.000.

Terabayashi, Takeshi: *See*—
Inagami, Kaoru; Ohmura, Kazutaka; Haruna, Masao; and Terabayashi, Takeshi, 4,269,863, Cl. 426-550.000.

Terada, Jiro; Nitta, Tsuneharu; and Ise, Yukihiko, to Matsushita Electric Industrial Co. Ltd. Humidity detecting apparatus. 4,270,085, Cl. 324-65.00R.

Terade, Kiichi; and Iida, Yasuhiro, to Kabushiki Kaisha Daini Seikosha. Miniature motor for an electronic timepiece including a stator having a non-magnetic reinforcing ring. 4,270,066, Cl. 310-258.000.

Terasawa, Masatoshi: *See*—
Ogawa, Koichi; Terasawa, Masatoshi; Iwata, Shizuo; Suzuki, Yoshihisa; and Tanakamaru, Hideki, 4,269,860, Cl. 426-5.000.

Terui, Yohji: *See*—
Ohtake, Nobumasa; Koga, Isao; and Terui, Yohji, 4,269,993, Cl. 556-450.000.

Teruji, Tsuji: *See*—
Mitsuru, Yoshioka; Teruji, Tsuji; Yasuhiro, Nishitani; and Wataru, Nagata, 4,269,773, Cl. 260-245.400.

Terzian, Berj A. Balanced complementary digital time displays. 4,270,196, Cl. 368-82.000.

Testone, Anthony Q., to Statics, Inc. Cleaner for circuit boards. 4,268,934, Cl. 15-306.00B.

Tetro, Roland G., to Transamerica DeLaval Inc. Method of making an encapsulated magnetic-reed switch circuit element adapted for use in interconnected array. 4,268,953, Cl. 29-602.00R.

Texaco Inc.: *See*—
Howard, Curtis E.; and Calvin, Douglas G., 4,269,211, Cl. 137-2.000.
Kalfoglou, George, 4,269,270, Cl. 166-273.000.
Knifton, John F., 4,270,015, Cl. 585-324.000.
Shupe, Russell D.; and Maddox, Jim, Jr., 4,269,271, Cl. 166-274.000.

Texas Instruments Incorporated: *See*—
Chatterjee, Pallab K.; and Tasch, Al F., Jr., 4,268,950, Cl. 29-571.000.
Orcutt, John W., 4,269,351, Cl. 236-87.000.
Werking, Paul M., 4,270,046, Cl. 250-205.000.

Texasgulf Inc.: *See*—
Altorfer, Kenneth J.; and Marantz, Daniel R., 4,269,867, Cl. 427-37.000.

Textoris, Melvin A.: *See*—
Kenworthy, Max H.; and Textoris, Melvin A., 4,270,020, Cl. 174-48.000.

Textron Inc.: *See*—
Larson, Eugene R.; and Harms, Walter, 4,269,246, Cl. 81-460.000.

Thatcher, C. S.: *See*—
United States of America, National Aeronautics and Space Administration; Ruiz, W. V.; and Thatcher, C. S., 4,269,640, Cl. 156-84.000.

Theis, Peter; Buchberger, Gregory D.; and Krueger, William J., to Morgan Electronics. Telephone line activity monitor. 4,270,024, Cl. 179-8.00A.

Theodore, Frank W., to Conoco, Inc. Apparatus for compacting, degassing and carbonizing carbonaceous agglomerates. 4,269,662, Cl. 202-100.000.

Thiel, Rudolf, to ITT Industries, Inc. Guiding device for brake pad supports of a spot-type disc brake. 4,269,290, Cl. 188-72.300.

Thomas, Alvin W.; and Mills, Benjamin G., to Trans-Canada Life-Ware Limited. Electric frying pan. 4,270,067, Cl. 219-438.000.

Thomas, Berwyn C., to Imperial Chemical Industries Limited. Apparatus for injection molding against a preformed web. 4,269,579, Cl. 425-111.000.

Thomas & Betts Corporation: *See*—
Bethurum, Gary C., 4,269,462, Cl. 339-74.00R.

Thomas C. Elder, Inc.: *See*—
Kaufman, Kurt D., 4,269,851, Cl. 424-279.000.
Kaufman, Kurt D., 4,269,852, Cl. 424-279.000.

Thomas, Dennis R., to Kress Corporation. Steering assembly. 4,269,560, Cl. 414-459.000.

Thomas, Douglas J.: *See*—
Clarke, Robin; Thomas, Douglas J.; Kilmister, George T. F.; and Beal, Robert R., 4,269,051, Cl. 72-9.000.

Thomas, Harold T.: *See*—
Houle, Conrad G.; Howe, Dennis G.; Thomas, Harold T.; Wrobel, Joseph J.; and Fike, Bruce G., deceased, 4,270,130, Cl. 346-77.00E.

Thomas, Lowell S., to Dow Chemical Company, The. Polycarbonate containing a salt of a tetrahydrocarbyl borate as an ignition depressant. 4,269,762, Cl. 260-45.70P.

Thomas, Roy W. Passive restrainer for small animals. 4,269,149, Cl. 119-103.000.

Thomson-CSF: *See*—
Bergero, Jean-Pierre; Charlet, Yves; and Leschaeve, Philippe, 4,270,100, Cl. 331-107.00A.
Blondel, Jacques; and Mahieu, Jean-Rene, 4,270,224, Cl. 455-327.000.
Gauthier, Francois H.; and Lepeytre, Jean-Paul, 4,269,476, Cl. 350-174.000.
Le Tron, Yves; Obregon, Juan; Marechal, Pierre-Georges; and Barvet, Serge, 4,270,097, Cl. 331-96.000.
Menant, Christophe, 4,270,222, Cl. 455-236.000.
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Strandell, Per O.; Thorslund, Erik M.; MacKenzie, Colin R.; and Smith, Norman, 4,268,948, Cl. 29-527.600.

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Bulle, Marcel; and Vuillaume, Jean, 4,269,026, Cl. 59-82.000.
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Weigl, Erwin, 4,269,431, Cl. 280-618.000.

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Okumura, Yoshiharu; and Kaneko, Katsumi, 4,270,011, Cl. 568-899.000.

Todd, Robert J.: *See*—
Reynolds, Gordon S.; and Todd, Robert J., 4,269,387, Cl. 251-122.000.

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Araki, Tatsuo; Okamoto, Yasuo; Ohtomo, Fumio; and Atsumi, Hiroto, 4,269,227, Cl. 137-630.140.
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Homan, Gary R.; and Toporcer, Louis H., 4,269,991, Cl. 556-427.000.

Toray Silicone Company, Ltd.: *See*—
Mine, Katsutoshi; Maruyama, Tsuneo; and Takeshita, Kazuhide, 4,269,753, Cl. 260-33.4SB.
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Hashimoto, Yasuyuki; and Torii, Osamu, 4,269,524, Cl. 401-65.000.

Torossian, Dieran R.; and Aubard, Gilbert G., to SIPSY. Process for the preparation of steroids. 4,269,778, Cl. 260-397.450.

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Inoue, Hitoshi; Watanabe, Kenichi; and Sumimoto, Takashi, 4,269,432, Cl. 280-690.000.

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Ichinose, Isao; Mori, Fumio; and Suzuki, Noboru, 4,269,321, Cl. 215-343.000.

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Ishida, Masayuki, 4,269,113, Cl. 99-404.000.

Toyoda, Shinichi: *See*—
Sakai, Masahiko; Toyoda, Shinichi; Narahara, Toshikazu; Hakamada, Takeshi; and Tsunoda, Tomoya, 4,269,894, Cl. 428-377.000.

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Hattori, Kyo, 4,269,028, Cl. 60-276.000.
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Kizu, Ryohei; Matoba, Taketo; Oguni, Yasuo; and Sakurai, Hideaki, 4,269,043, Cl. 64-11.00R.

Tracy, John M.: *See*—
Yeh, Pochi A.; and Tracy, John M., 4,269,481, Cl. 350-356.000.

Trans-Canada Life-Ware Limited: *See*—
Thomas, Alvin W.; and Mills, Benjamin G., 4,270,067, Cl. 219-438.000.

Transamerica DeLaval Inc.: *See*—
Tetro, Roland G., 4,268,953, Cl. 29-602.00R.

Tranter, Harold W., to British Industrial Plastics Limited. Compression moulding presses. 4,269,587, Cl. 425-451.900.

Treiber, Hans J.; Lenke, Dieter; and Worstmann, Wolfgang, to BASF Aktiengesellschaft. Hexahydro-1,4-oxazepines, their preparation, and drugs containing these compounds. 4,269,833, Cl. 424-244.000.

Tresch, Erwin: *See*—
Horvath, Zoltan; Muggli, Jurg; Ackermann, Hans; and Tresch, Erwin, 4,269,510, Cl. 356-338.000.

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Sisti, Giorgio; Trestianu, Sorin; and Galli, Mario, 4,269,608, Cl. 55-67.000.

Tri State Culvert Corporation: *See*—
Johnson, Doyle F.; and Goetz, Nelson F., 4,269,234, Cl. 138-121.000.

Triangle Accessoires de Motocyclettes Ltee.: *See*—
LaRose, Claude; and Gagnon, Jacques, 4,269,335, Cl. 224-31.000.

Tringali, Richard C.: *See*—
Zboralski, Jon A.; Tringali, Richard C.; and Grow, Harry N., 4,269,615, Cl. 55-480.000.

Troeng, John: *See*—
Broberg, Hans; Douren, Lars; and Troeng, John, 4,269,655, Cl. 159-13.00A.

TRW, Inc: *See*—
Jones, Robert J.; Green, Howard E.; and Quinlivan, Sandra C., 4,269,961, Cl. 526-262.000.

Tsang, Won-Tien: *See*—
Logan, Ralph A.; and Tsang, Won-Tien, 4,269,635, Cl. 148-171.000.

Tsuchiya, Tatsuhiko; and Oka, Mikiwo, to Alps Electric Co., Ltd. Automatic stop mechanism for tape recorder. 4,269,373, Cl. 242-191.000.
Tsuchiya, Yoshimi: *See*—
Sakurai, Akira; Tsuchiya, Yoshimi; and Mizutani, Hiroshi, 4,269,187, Cl. 128-263.000.
Tsuda, Hiroshi; Miyashita, Kiyoshi; and Matsuyama, Takashi, to Olympus Optical Co., Ltd. Sheet holding cassette. 4,269,407, Cl. 271-127.000.
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Tsukagoshi, Tsunehiro: *See*—
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Tanaka, Hiroshi; and Tsuneda, Terukuni, 4,269,921, Cl. 430-119.000.
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Kunii, Kazuya; Tsutsumi, Saburo; and Ishizawa, Shizuo, 4,269,153, Cl. 123-308.000.
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Zhestkov, Vladimir M.; Tsypin, Vladimir M.; Grzhebin, Mikhail Z.; Kaminsky, Vadim A.; and Mazepov, Vitaly G., 4,269,599, Cl. 440-88.000.
Tullman, Edward J., to Singer Company, The. Retractable retaining device for sewing machine support plate. 4,269,129, Cl. 112-257.000.
Turner, John H. W.: *See*—
Shackleton, Charles E. E., deceased; Shackleton, Edward A. B., executor; Wickens, Anthony J.; and Turner, John H. W., 4,269,816, Cl. 423-498.000.
Turner, Roger M.: *See*—
Milner, John A.; and Turner, Roger M., 4,269,702, Cl. 209-166.000.
Tuscher, Roger L.: *See*—
Benton, Charles M.; Arnold, Franklin D.; Forberg, Helge O.; Tuscher, Roger L.; and Evrad, Gerald D., 4,269,592, Cl. 432-19.000.
Tynan, Eugene E.; Dreyfus, Russell W.; and von Gutfeld, Robert J., to International Business Machines Corporation. Method and apparatus for focusing elastic waves converted from thermal energy. 4,269,067, Cl. 73-643.000.
Uarco Incorporated: *See*—
Polko, Peter R., 4,269,341, Cl. 225-94.000.
Ube Industries, Ltd.: *See*—
Nakai, Mamoru; Harada, Katsumasa; and Mori, Yoshikatsu, 4,269,982, Cl. 548-127.000.
Ueno, Toyoaki; and Uchida, Masashi, 4,269,259, Cl. 164-303.000.
Uchida, Keiichiro: *See*—
Tanakura, Yoshiyuki; and Uchida, Keiichiro, 4,270,181, Cl. 364-736.000.
Uchida, Masashi: *See*—
Ueno, Toyoaki; and Uchida, Masashi, 4,269,259, Cl. 164-303.000.
Uchino, Shoichi: *See*—
Nonogaki, Saburo; Morishita, Hajime; Uchino, Shoichi; and Manabe, Toshikatsu, 4,269,918, Cl. 430-28.000.
Uchiyama, Takashi: *See*—
Suzuki, Ryoichi; Kinoshita, Takao; Ogawa, Yukio; and Uchiyama, Takashi, 4,269,493, Cl. 354-51.000.
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Uetsuki, Tsuneo: *See*—
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Uhlendorf, Joachim; Betzing, Hans; Gabbar, Hamied; Graf, Erich; and Doppelfeld, Ille-Stephanie, to A. Nattermann & Cie. GmbH. (3-Alkylamino-2-hydroxypropoxy)-furan-2-carboxylic acid anilides and physiologically tolerated acid addition salts thereof and medicaments containing them. 4,269,855, Cl. 424-285.000.
Ulrich, Reinhard: *See*—
Johnson, Mark; and Ulrich, Reinhard, 4,269,506, Cl. 356-5.000.
Umans, Frans M.; Ceuppens, Willy G.; Palmans, Willy J.; and Overmeer, Robert T., to AGFA-GEVAERT N.V. Contact heat fusing apparatus. 4,269,594, Cl. 432-59.000.
Umberger, John H.: *See*—
Hankins, Frederick E.; and Umberger, John H., 4,270,086, Cl. 368-118.000.
Umemura, Tetsuya: *See*—
Inoue, Sadao; Umemura, Tetsuya; Suzuki, Hiroshi; and Kuroyanagi, Takashi, 4,269,623, Cl. 75-157.500.
Underwood, John F. Electromagnetic pickup for stringed musical instruments. 4,269,103, Cl. 84-1.160.
Ungerer, Heinz-Jurgen: *See*—
Sommer, Rolf; Schweinfurth, Gustav; and Ungerer, Heinz-Jurgen, 4,269,800, Cl. 264-111.000.
Unigovsky, Mikhail R.; Rulevsky, Evgeny V.; Arendt, Georgy A.; Chirskov, Vladimir G.; Konovalov, Julian K.; Ivanov, Vasily T.; Nemirovsky, Isaak Y.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; and Kheinis, Alexandr B. Apparatus for removing a welding bulge from resistance welded pipes. 4,269,552, Cl. 409-140.000.
Union Carbide Corporation: *See*—
Litteral, Carl J.; and Mullins, David L., 4,269,992, Cl. 556-446.000.
Su, Tsung-Yuan, 4,269,756, Cl. 260-37.00R.
Union Oil Company of California: *See*—
Young, Dean A., 4,270,017, Cl. 585-437.000.
Union Special Corporation: *See*—
Boser, Ronald J.; and Watts, Henry J., 4,269,128, Cl. 112-235.000.
United Industrial Syndicate, Inc.: *See*—
Parrent, Russell, 4,269,575, Cl. 417-542.000.
United States Machine Works, Inc.: *See*—
Feith, Donald, 4,269,163, Cl. 124-77.000.
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Air Force: *See*—
Campbell, John, Jr., 4,269,107, Cl. 89-7.000.
Woermbke, James D., 4,270,106, Cl. 333-246.000.
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Carlon, Hugh R.; and Pritt, Rex M., 4,270,084, Cl. 324-65.00R.
Gilbert, Everett E., 4,270,012, Cl. 568-931.000.
Gutleber, Frank S., 4,270,207, Cl. 375-40.000.
Ong, Kwok Y.; Packard, Michael T.; and McDowell, Charles J., 4,269,057, Cl. 73-1.00G.
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Lindenmeyer, Carl W., 4,269,366, Cl. 242-4.00R.
Schweitzer, Donald G.; Sastre, Cesar; and Winsche, Warren, 4,269,728, Cl. 252-301.10W.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Rosser, Robert W.; Shalhoub, Ibrahim M.; and Kwong, Hanoi. Bifunctional monomers having terminal oxime and cyano or amidine groups. 4,269,787, Cl. 260-465.50R.
Ruiz, W. V.; and Thatcher, C. S. Precision heat forming of tetrafluoroethylene tubing. 4,269,640, Cl. 156-84.000.
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Alsup, James M.; and Whitehouse, Harper J., 4,270,025, Cl. 179-15.55R.
Gillespie, George P., 4,268,930, Cl. 9-2.00A.
Hackman, Donald J.; Brunel, Roger L.; and Williams, Harry L., 4,269,383, Cl. 248-544.000.
Hills, Brian A., 4,269,791, Cl. 261-36.00R.
Mackelburg, Gerald R.; McCracken, Howard B.; and McCardell, Peter D., 4,270,142, Cl. 358-99.000.
Rahn, John P., 4,269,518, Cl. 356-445.000.
Sochard, Irving I., 4,269,121, Cl. 102-213.000.
U.S. Philips Corporation: *See*—
Bentlage, Bernardus W. J.; and Spakman, Geert, 4,270,225, Cl. 455-347.000.
Boonstra, Alexander H.; Mutsaers, Cornelis A. H. A.; and Van der Kruijs, Franciscus N. G. R., 4,269,898, Cl. 428-426.000.
Coe, David J., 4,270,137, Cl. 357-53.000.
Molenaar, Arian, 4,269,625, Cl. 106-1.220.
Opheij, Willem G.; and Greve, Peter F., 4,270,045, Cl. 250-204.000.
United States Steel Corporation: *See*—
Coates, William R., Jr.; and Vance, M. William, 4,269,266, Cl. 165-142.000.
United Technologies Corporation: *See*—
DeCasperis, Anthony J.; Roethlein, Richard J.; and Breault, Richard D., 4,269,642, Cl. 156-89.000.
Murphy, Richard D.; and Clelford, Douglas H., 4,270,168, Cl. 364-200.000.
Universal Det, S.A.R.L.: *See*—
Collard, Jean-Claude, 4,270,123, Cl. 340-629.000.
University of Illinois Foundation: *See*—
Holonyak, Nick, Jr., 4,270,094, Cl. 331-94.50H.
UOP Inc.: *See*—
Bailey, Charles H.; DePalma, Ted V.; and Dillon, James E., 4,269,807, Cl. 422-179.000.
Imai, Tamotsu, 4,269,998, Cl. 564-132.000.
Priegnitz, James W.; and Landis, Arthur M., 4,270,013, Cl. 568-940.000.
Tolley, William K.; and Laughlin, William C., 4,269,809, Cl. 423-70.000.
Upjohn Company, The: *See*—
Sih, John C., 4,269,779, Cl. 260-404.000.
Sih, John C., 4,269,994, Cl. 560-53.000.
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Urai, Muneharu. Three-dimensional planter. 4,268,994, Cl. 47-79.000.
Urban, Rene: *See*—
Muller, Peter M.; Pfister, Rudolf; and Urban, Rene, 4,269,788, Cl. 260-501.100.
Ury, Michael G.; and Ryan, Patrick J., to Fusion Systems Corporation. Apparatus for molding thermosetting material. 4,269,581, Cl. 425-174.400.
Uson, Aurelio C. Aseptic container and manipulator for a urethral catheter having an integral antiseptic solution and lubricant. 4,269,310, Cl. 206-210.000.
Ustin, Martin D. Modular electrical terminal board. 4,269,470, Cl. 339-198.00H.
USV Pharmaceutical Corporation: *See*—
Huang, Fu C.; and Musser, John H., 4,269,846, Cl. 424-269.000.
Utility Trailer Manufacturing Company: *See*—
Warwick, James M.; and Liu, David C., 4,269,439, Cl. 292-246.000.
Uyeda, Stanley T.; Radu, E. John; Talbot, William J., Jr.; and Feldman, Norman, to Santa Fe International Corporation. Self propelled dynamically positioned reel pipe laying ship. 4,269,540, Cl. 405-168.000.

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Van Arman, William L.; Kambs, Russell A.; Ivankovics, Steven G.; Hansen, Frederick W.; and Julow, Thomas M., to Bendix Corporation, The. Method of assemblying a sealed structure. 4,268,945, Cl. 29-407.000.

Vance, Gilbert W.: *See*—
Menzel, S. W. O.; Mock, Donald E.; Mominee, David E.; Vance, Gilbert W.; and Zauner, Dale P., 4,269,357, Cl. 239-272.000.

Vance, M. William: *See*—
Coates, William R., Jr.; and Vance, M. William, 4,269,266, Cl. 165-142.000.

Vandenberghe, Antoon L.: *See*—
Roosen, Raymond A.; Pollet, Robert J.; and Vandenberghe, Antoon L., 4,269,923, Cl. 430-140.000.

Vanderhider, James A.; and Lancaster, Gerald M., to Dow Chemical Company, The. Reaction injection molded polyurethanes employing aliphatic amine chain extenders. 4,269,945, Cl. 521-159.000.

Van der Kruijs, Franciscus N. G. R.: *See*—
Boonstra, Alexander H.; Mutsaers, Cornelis A. H. A.; and Van der Kruijs, Franciscus N. G. R., 4,269,898, Cl. 428-426.000.

van der Lely, Cornelis. Lifting device and associated structure. 4,269,427, Cl. 280-446.00A.

van der Linden-Lemmers, Wilhelmina J. M.: *See*—
Kortbeek, Andras G. T. G.; and van der Linden-Lemmers, Wilhelmina J. M., 4,269,732, Cl. 252-429.00B.

Vanderspurt, Thomas H.; and Zema, Paul M., to Celanese Corporation. Dimeric carbonylation of 1,3-butadiene. 4,269,781, Cl. 260-410.90R.

Vandervoort, John R., to Eaton Corporation. Change gear transmission. 4,269,077, Cl. 74-331.000.

Vanderzee, Robert S., to Steelastic Company, The. Second stage tire building drum and method for the operation thereof. 4,269,649, Cl. 156-416.000.

Van Eenam, Donald N., to Monsanto Company. Purification of wet strength resins. 4,269,951, Cl. 525-359.000.

Van Grinsven, Donald R.; and Winius, Michael H. Swing-a-way camp grill. 4,269,164, Cl. 126-30.000.

Vann, Peabody: *See*—
Vann, Roy R., 4,269,278, Cl. 175-4.510.

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Van Siclen, Howard E., Jr., to Bendix Corporation, The. Breakerless pulse distribution system and opto-electrical distributor therefor. 4,269,152, Cl. 123-146.50A.

Varda, Eugene I.: *See*—
Przybylinski, Phillip G.; Schuller, James J.; and Varda, Eugene I., 4,268,968, Cl. 33-174.00P.

Varian Associates, Inc.: *See*—
Mann, Joseph K., 4,270,091, Cl. 324-462.000.

Varta Batterie Aktiengesellschaft: *See*—
Rabenstein, Heinrich; Kalbitz, Angela; and Kleber, Karl H., 4,269,912, Cl. 429-225.000.

VEB Elektromat: *See*—
Riessland, Eberhard; and Kruger, Karl-Heinz, 4,270,109, Cl. 335-277.000.

Veeder, George T.: *See*—
Kang, Kenneth S.; Veeder, George T.; and Mirrasoul, Peter J., 4,269,939, Cl. 435-104.000.

Veeder Industries Inc.: *See*—
Devanney, Raymond H., 4,269,078, Cl. 74-348.000.

Veldman, Donald R., to Langdon, Howard S. Tilting terminal clamp. 4,269,464, Cl. 339-95.00R.

Vella, Alexander J.: *See*—
Siegel, William J.; Lee, Walter; and Vella, Alexander J., 4,269,343, Cl. 228-20.000.

Venere, Lawrence A.; and Domes, E. A., to International Harvester Company. Method for resurfacing disc brake rotors. 4,269,002, Cl. 51-281.0SF.

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Fleissner, Hans, 4,268,941, Cl. 28-281.000.

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Verkinderen, Paul A.; Verhoeven, Ludovicus H.; Christiaen, Lucien A.; Pira, Camille F.; and Marckx, Michel L., 4,269,647, Cl. 156-157.000.

Verkinderen, Paul A.; Verhoeven, Ludovicus H.; Christiaen, Lucien A.; Pira, Camille F.; and Marckx, Michel L., to AGFA-GEVAERT N.V. Method for the continuous coating of webs having spliced joints. 4,269,647, Cl. 156-157.000.

Verr, Raymond E. Circuitry for burglar alarm annunciator. 4,270,121, Cl. 340-514.000.

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Verzwyvelt, Scott A.: *See*—
Lim, Hong S.; and Verzwyvelt, Scott A., 4,269,913, Cl. 429-251.000.

Vetsch, LeRoy E.: *See*—
Nelson, Harold K.; Kleingartner, Charles A.; and Vetsch, LeRoy E., 4,269,070, Cl. 73-779.000.

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Vinals, Joaquin F.: *See*—
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,269,862, Cl. 426-536.000.

Virog, John J., Jr.; and Von Hagel, Leo, to Maxcap, Inc. Blow molded plastic bottle and anti-tamper cap. 4,269,320, Cl. 215-252.000.

VLSI Technology Research Association: *See*—
Wada, Hirotsugu; and Shinozaki, Toshiaki, 4,269,653, Cl. 156-644.000.

Vock, Manfred H.: *See*—
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,269,862, Cl. 426-536.000.

Voest-Alpine Aktiengesellschaft: *See*—
Engel, Kurt; and Scheurecker, Werner, 4,269,260, Cl. 164-442.000.

Voigt, Werner: *See*—
Haux, Ulrich; and Voigt, Werner, 4,269,376, Cl. 244-117.00R.

Volkswagenwerk Aktiengesellschaft: *See*—
Grundmann, Edgard; and Bernhardt, Winfried, 4,269,040, Cl. 62-467.0PR.

Volpe, Lee S.: *See*—
Cotey, John; and Volpe, Lee S., 4,268,991, Cl. 46-163.000.

Von Roll AG: *See*—
Witschi, Fritz, 4,269,232, Cl. 138-96.00R.

von Bennigsen-Mackiewicz, Andreas; and von Bennigsen-Mackiewicz, Christoph. Apparatus for measuring and controlling flow of pulverulent material. 4,269,548, Cl. 406-25.000.

von Bennigsen-Mackiewicz, Christoph: *See*—
von Bennigsen-Mackiewicz, Andreas; and von Bennigsen-Mackiewicz, Christoph, 4,269,548, Cl. 406-25.000.

von Gutfeld, Robert J.: *See*—
Tynan, Eugene E.; Dreyfus, Russell W.; and von Gutfeld, Robert J., 4,269,067, Cl. 73-643.000.

Von Hagel, Leo: *See*—
Virog, John J., Jr.; and Von Hagel, Leo, 4,269,320, Cl. 215-252.000.

Voplex Corp.: *See*—
Gans, Leo; Bruins, Paul F.; Shapiro, Jay B.; and Rothman, Myron, 4,269,897, Cl. 428-419.000.

Vorbeck, Donald W., to Atco Manufacturing Co., Inc. Animal watering system. 4,269,147, Cl. 119-73.000.

Vorwerk & Co. Interholding GmbH: *See*—
Birr, Hans J., 4,269,519, Cl. 366-206.000.

Vossberg, Carl A., to Electron Machine Corporation. Non-contact scanning gage. 4,269,514, Cl. 356-386.000.

Vuillaume, Jean: *See*—
Bulle, Marcel; and Vuillaume, Jean, 4,269,026, Cl. 59-82.000.

W. L. Burke, Inc.: *See*—
Marple, Elwood, 4,268,925, Cl. 4-449.000.

Wada, Akira; and Davis, Bernard J., to Nippon Zeon Co., Ltd. Crosslinkable adhesive composition. 4,269,747, Cl. 260-27.0BB.

Wada, Hirotsugu; and Shinozaki, Toshiaki, to VLSI Technology Research Association. Aperture stop. 4,269,653, Cl. 156-644.000.

Wada, Kenichi; Oka, Tateki; Tanaka, Susumu; and Tabuchi, Kenji, to Minolta Camera Kabushiki Kaisha. Dry process developing material for electrophotography. 4,269,920, Cl. 430-107.000.

Wada, Norikazu, to Honeywell Inc. Electrodes for an electromagnetic flow meter. 4,269,071, Cl. 73-861.120.

Wagensommer, Joseph; and Manalastas, Pacifico V., to Exxon Research & Engineering Company. Catalyst composition polymerization of isoolefins and multiolefins. 4,269,955, Cl. 526-185.000.

Wagner, Paul D.: *See*—
Glandorf, Frank J.; Wagner, Paul D.; and Keuper, John J., 4,270,064, Cl. 310-90.000.

Wagner, Reinhard: *See*—
Heise, Hartmut; Hille, Ernst; Wagner, Reinhard; and Kummerle, Kurt, 4,269,989, Cl. 548-305.000.

Wakabayashi, Hiroharu: *See*—
Sato, Masanori; Wakabayashi, Hiroharu; Ejiri, Yoshihiro; and Yamamoto, Hitoshi, 4,270,029, Cl. 179-175.31R.

Wakimoto, Saburo; Miyahara, Sadayasu; and Hyosu, Yoshihiko, to Sinloihi Company Limited. Fine spherical polymer particles containing inorganic pigment and/or coloring agent and process for the preparation thereof. 4,269,760, Cl. 260-42.530.

Wakita, Toshiaki: *See*—
Ichimiya, Yoshichika; Sudo, Tsuneta; Maruyama, Hiromi; Sugamori, Shigeru; Sumida, Susumu; Shimizu, Masao; and Wakita, Toshiaki, 4,270,116, Cl. 340-146.200.

Walchli, John R., to Enviropak Inc. Closure device for container. 4,268,938, Cl. 24-201.00C.

Wald Manufacturing Co., Inc.: *See*—
Humlong, Robert F., 4,269,336, Cl. 224-36.000.

Walker, Loren H.; and Cutler, John H., to General Electric Company. Method and apparatus for a variable frequency inverter system having commutation fault detection and correction capabilities. 4,270,078, Cl. 318-803.000.

Walker, Robert A. Air-oil separator and method of separation. 4,269,607, Cl. 55-1.000.

Wallasch, Helmut: *See*—
Sonntag, Heinrich; and Wallasch, Helmut, 4,269,258, Cl. 164-252.000.

Walter, Karl-Heinz: *See*—
Krueger, Hans; Schauer, Alois; and Walter, Karl-Heinz, 4,269,480, Cl. 350-355.000.

Walters, Noel E.: *See*—
Miller, Rickie L.; and Walters, Noel E., 4,269,646, Cl. 156-128.00N.

Walton, Lawrence J.: *See—*
Parker, Peter D.; Walton, Robert N.; and Walton, Lawrence J., 4,269,172, Cl. 126-450.000.

Walton, Robert N.: *See—*
Parker, Peter D.; Walton, Robert N.; and Walton, Lawrence J., 4,269,172, Cl. 126-450.000.

Wand, Lawrence J. Tool assembly for mounting a wire clip to a grid member of a false ceiling. 4,269,087, Cl. 81-5.10R.

Wandel, David M., to General Motors Corporation. Connecting rod. 4,269,083, Cl. 74-579.00E.

Waplans Mekaniska Verkstads AB: *See—*
Olsson, Curt S.; Widerstrom, Olle; and Kilian, Lars E., 4,269,458, Cl. 308-9.000.

Ward, Bruce K., to Insulation Sales Co. Vent and baffles. 4,269,007, Cl. 52-92.000.

Ware, Ormond H.: *See—*
Nemethy, Mike Z., 4,269,595, Cl. 433-191.000.

Warihashi, Yoshinori. Cigarette lighter with a built-in battery checker. 4,270,038, Cl. 219-269.000.

Warwick, James M.; and Liu, David C., to Utility Trailer Manufacturing Company. Door holdback device. 4,269,439, Cl. 292-246.000.

Watanabe, Eiki: *See—*
Ishii, Toshiaki; and Watanabe, Eiki, 4,269,286, Cl. 187-29.00R.

Watanabe, Kenichi: *See—*
Inoue, Hitoshi; Watanabe, Kenichi; and Sumimoto, Takashi, 4,269,432, Cl. 280-690.000.

Watanabe, Sakuji: *See—*
Motoori, Ryuzo; Watanabe, Sakuji; and Ohtsubo, Yoshiaki, 4,269,496, Cl. 354-267.000.

Watanabe, Takashi: *See—*
Ikeno, Teruo; Kado, Satoshi; Ayusawa, Saburo; Kawasaki, Hironobu; and Watanabe, Takashi, 4,269,904, Cl. 428-623.000.

Watanabe, Tsuyoshi; Murase, Hidetoshi; Murayama, Akira; and Nakasugi, Mikio, to Canon Kabushiki Kaisha. Elastic roller for image forming. 4,268,943, Cl. 29-131.000.

Wataru, Nagata: *See—*
Mitsuru, Yoshioka; Teruji, Tsuji; Yasuhiro, Nishitani; and Wataru, Nagata, 4,269,773, Cl. 260-245.400.

Water Services of America, Inc.: *See—*
Goeldner, Richard W., 4,269,264, Cl. 165-95.000.

Watson, Frederick D.; Mayse, Weldon D.; and Franse, Albert D., to Petrolite Corporation. Radial flow electrofilter. 4,269,681, Cl. 204-188.000.

Watson, John D. Metered dispensing device. 4,269,331, Cl. 222-390.000.

Watson, Robert L.: *See—*
Rayburn, Robert L.; Watson, Robert L.; Elbel, Charles R.; and Schweickardt, Karl W., 4,269,194, Cl. 128-719.000.

Watt, David S.; and Ives, Jeffrey L., to Pfizer Inc. Hypoglycemic guanylamidines, compositions and use. 4,269,837, Cl. 424-246.000.

Watts, Henry J.: *See—*
Boser, Ronald J.; and Watts, Henry J., 4,269,128, Cl. 112-235.000.

Wawrzyniak, Walter W. Floating tool holder. 4,269,421, Cl. 279-16.000.

Waxman, Elliot: *See—*
Weintraub, Morton; Waxman, Elliot; and Gendelman, Bernard, 4,270,226, Cl. 455-353.000.

Weaver, Harry R.: *See—*
Ammon, J. Preston; Weaver, Harry R.; and Rodriquez, Claude, 4,269,468, Cl. 339-176.00M.

Webb, John L., to Xerox Corporation. Single sheet friction feeder. 4,269,404, Cl. 271-42.000.

Weber, Joseph. Document retaining system. 4,269,530, Cl. 402-15.000.

Weber, Jurgen; Bernhagen, Wolfgang; and Springer, Helmut, to Ruhrchemie Aktiengesellschaft. 2-Propyl-pent-4-en-1-al. 4,270,008, Cl. 568-448.000.

Weber, Karl-Heinz, to Gebr. Eickhoff Maschinenfabrik und Eisengeisserei m.b.H. Current supply circuit of cutting drum motors on a mining machine. 4,270,072, Cl. 318-34.000.

Wechsler, Joseph R.; Baker, Thomas G.; Battaglini, George T.; and Skradski, Frank L., to Stepan Chemical Company. Substituted imidazoline reactions with chloroacetate salts. 4,269,730, Cl. 252-356.000.

Wedlake, Roger J., to South African Inventions Development Corp. Electrochemical cell and the protection of an electrochemical cell. 4,269,905, Cl. 429-8.000.

Weiche, William J.: *See—*
Shattuck, Meredith D.; and Weiche, William J., 4,269,892, Cl. 428-337.000.

Weico Corporation: *See—*
Nelson, Harold K.; Kleingartner, Charles A.; and Vetsch, LeRoy E., 4,269,070, Cl. 73-779.000.

Weigl, Erwin, to TMC Corporation. Safety ski binding. 4,269,431, Cl. 280-618.000.

Weiler, Rolf, to ITT Industries, Inc. Reaction lever mechanism for a vacuum brake booster. 4,269,110, Cl. 91-369.00B.

Weinecke, Michael H.: *See—*
Faulkner, Bobby P.; Heyer, Wayne D.; and Weinecke, Michael H., 4,269,593, Cl. 432-58.000.

Weintraub, Morton; Waxman, Elliot; and Gendelman, Bernard. Remote control system. 4,270,226, Cl. 455-353.000.

Weir, W. David: *See—*
Seidel, Michael; Weir, W. David; and Wolfersberger, Martha H., 4,269,829, Cl. 424-211.000.

Weisbecker, Joseph A., to RCA Corporation. Display system. 4,270,125, Cl. 340-744.000.

Weischedel, Herbert R., to Otis Elevator Company. Method and apparatus for magnetically testing metal tapes. 4,270,088, Cl. 324-241.000.

Weisert, Edward D.: *See—*
Agrawal, Suphal P.; and Weisert, Edward D., 4,269,053, Cl. 72-42.000.

Welborn, Woodrow W. Asphalt shingle remover and deroofer apparatus. 4,269,450, Cl. 299-39.000.

Welch, Henry H. Device for carrying out high precision dilutions and dosages of liquids, particularly biological liquids. 4,269,327, Cl. 222-135.000.

Wenner, Donald B.: *See—*
Fitzke, Emil V.; Wenner, Donald B.; and Polak, Michael J., 4,269,616, Cl. 55-493.000.

Werking, Paul M., to Texas Instruments Incorporated. Two-terminal optical sensor. 4,270,046, Cl. 250-205.000.

West, Earl L. Insulated building block wall construction. 4,269,013, Cl. 52-405.000.

Western Electric Company, Inc.: *See—*
Dinella, Donald; Haller, Albert H.; and Polakowski, Theodore D., Jr., 4,269,138, Cl. 118-115.000.
Meal, John R.; and Sandmore, Donald K., 4,268,942, Cl. 29-25.420.

Westinghouse Electric Corp.: *See—*
Anderson, Paul T., 4,270,113, Cl. 337-75.000.
Borona, Russell T.; and Coley, Kenneth R., 4,270,031, Cl. 200-50.00C.
Foster, Karl; and Shilling, Jack W., 4,269,634, Cl. 148-120.000.
Kmonk, Stanley; Cadwell, Dennis J.; and Ferlan, Stephen J., 4,269,661, Cl. 176-50.000.
Martincic, Paul W.; and Greene, Charles E., 4,270,110, Cl. 336-174.000.
Meyer, Lloyd E., 4,270,111, Cl. 336-70.000.
Morton, Edward W., 4,270,071, Cl. 315-62.000.
Osborne, Robert L., 4,269,030, Cl. 60-641.00R.
Ronnen, Uri G.; Podolsky, Leaman B.; and Giras, Theodore C., 4,270,055, Cl. 290-40.00R.
Rush, Donald L.; and Kapadia, Jayant K., 4,269,377, Cl. 246-182.00B.
Schlegel, Earl S.; and Hanes, Maurice H., 4,270,135, Cl. 357-19.000.

Whipp, Arthur A.: *See—*
Chan, David C. K.; and Whipp, Arthur A., 4,269,856, Cl. 424-321.000.

Whirlpool Corporation: *See—*
Baker, Cecil J., 4,269,039, Cl. 62-344.000.

White, Alfred K.; and Brearley, Malcolm, to Girling Limited. Anti-skid brake control system. 4,269,454, Cl. 303-97.000.

White, Ben E.: *See—*
Geyer, Charles J., Jr.; and White, Ben E., 4,269,973, Cl. 536-101.000.

White, William R., to Occidental Research Corporation. Flotation of inorganic materials from glass using hydrocarbon sulfonates. 4,269,700, Cl. 209-12.000.

Whitear, Brian R. D.: *See—*
Mason, Leslie F. A.; Kitzing, Rainer; Whitear, Brian R. D.; Long, William E.; Wood, Glenn P.; and Reeves, David L. R., 4,269,928, Cl. 430-239.000.

Whitehouse, Harper J.: *See—*
Alsup, James M.; and Whitehouse, Harper J., 4,270,025, Cl. 179-15.55R.

Whitney, Arthur D.: *See—*
Newman, Aubrey W.; Coffey, J. E.; and Whitney, Arthur D., 4,269,686, Cl. 204-212.000.

Whitney, Douglass G.; and Martin, John K., III. Self contained mechanical injector. 4,269,185, Cl. 128-214.00F.

Whittaker Corporation: *See—*
Lawton, Emil A., 4,269,959, Cl. 526-194.000.

Whittle, Barry J. Nasal composition for relieving nasal distress. 4,269,835, Cl. 424-247.000.

Wickens, Anthony J.: *See—*
Shackleton, Charles E. E., deceased; Shackleton, Edward A. B., executor; Wickens, Anthony J.; and Turner, John H. W., 4,269,816, Cl. 423-498.000.

Wickham, David J. Buoyant device with means for producing thrust. 4,268,989, Cl. 46-92.000.

Widerstrom, Olle: *See—*
Olsson, Curt S.; Widerstrom, Olle; and Kilian, Lars E., 4,269,458, Cl. 308-9.000.

Wiehler, Wolf, to Siemens Aktiengesellschaft. Traveling wave tube and method of making same. 4,270,069, Cl. 315-3.500.

Wikner, Jan: *See—*
Bojesgard, Pehr; Kullendorff, Anders; and Wikner, Jan, 4,269,151, Cl. 122-4.00D.

Wilkinson Sword, Ltd.: *See—*
Harrison, Christopher R. B., 4,268,963, Cl. 30-262.000.

Williams, Bruce T. D.C. Electrostatic voltage follower having ion-coupled probe. 4,270,090, Cl. 324-457.000.

Williams, Donald E.: *See—*
Robertson, Forrest E.; and Williams, Donald E., 4,269,274, Cl. 172-699.000.

Williams, Eugene E.: *See—*
Noyes, Ronald T.; Lynch, Gregory A.; and Williams, Eugene E., 4,268,971, Cl. 34-34.000.

Williams, Franklin G. Reciprocating saw for tree topping. 4,268,966, Cl. 30-372.000.

Williams, Harry L.: *See—*
Hackman, Donald J.; Brunel, Roger L.; and Williams, Harry L., 4,269,383, Cl. 248-544.000.

Williams, John F., to Du Pont de Nemours, E. I., and Company. Centrifuge refrigeration system. 4,269,042, Cl. 62-513.000.

Wilson, Arthur G.: *See*—
Logie, James A.; Bryan, T. James; and Wilson, Arthur G., 4,270,147, Cl. 358-256.000.

Wilson, Donald R., to Halliburton Company. Lock tab for centralizer end ring. 4,269,269, Cl. 166-241.000.

Wilson, Samuel L., to Anderson Strathclyde Limited. Mineral mining machine cutter driving mechanism having a load sensing device to regulate the haulage speed of the machine when the cutter driving mechanism is overloaded. 4,269,448, Cl. 299-1.000.

Winckler, Wilhelm: *See*—
Bohn, Hans; and Winckler, Wilhelm, 4,269,825, Cl. 424-85.000.

Windsor Machine Company Limited: *See*—
Deelman, Hayo E.; and Porritt, Gordon S., 4,269,100, Cl. 83-834.000.

Winius, Michael H.: *See*—
Van Grinsven, Donald R.; and Winius, Michael H., 4,269,164, Cl. 126-30.000.

Winkler, Peter S., to Eaton Corporation. Retarder. 4,269,289, Cl. 188-71.600.

Winkley, Jerry H., to ACF Industries Incorporated. Tamper resistant choke opening means. 4,269,792, Cl. 261-39.00B.

Winsche, Warren: *See*—
Schweitzer, Donald G.; Sastre, Cesar; and Winsche, Warren, 4,269,728, Cl. 252-301.10W.

Wintersdorff, Peter, to Merck & Co., Inc. Clabber-free xanthan gum. 4,269,974, Cl. 536-114.000.

Wintershall Aktiengesellschaft: *See*—
Engbers, Hermann, 4,269,082, Cl. 74-522.000.

Wisconsin Alumni Research Foundation: *See*—
De Luca, Hector F.; Schnoes, Heinrich K.; Napoli, Joseph L.; and Fivizzani, Mary A., 4,269,777, Cl. 260-397.100.

Witschi, Fritz, to Von Roll AG. Protective cap for pipes. 4,269,232, Cl. 138-96.00R.

Witte, Horst: *See*—
Simonek, Rudiger; Gumm, Peter; Idstein, Hermann; and Witte, Horst, 4,269,409, Cl. 271-277.000.

WLPU Holdings Limited: *See*—
Bosman, Peter B., 4,269,795, Cl. 261-111.000.

Woermbke, James D., to United States of America, Air Force. Broadband mode suppressor for microwave integrated circuits. 4,270,106, Cl. 333-246.000.

Woertz, Hans, to Woertz, Oskar. Electrical terminal for attachment to a contact bar. 4,269,471, Cl. 339-198.0GA.

Woertz, Oskar: *See*—
Woertz, Hans, 4,269,471, Cl. 339-198.0GA.

Woerz, Otto: *See*—
Heilen, Gerd; Nissen, Axel; and Woerz, Otto, 4,270,006, Cl. 568-396.000.

Wolf, Elmar, to Wolf, Sarl O. Means for impelling grass clippings in a rotary-scythe grass mower. 4,269,020, Cl. 56-295.000.

Wolf, Gerhard D.: *See*—
Elfert, Klaus; Wolf, Gerhard D.; and Rosenkranz, Hans J., 4,269,967, Cl. 528-337.000.

Wolf, Sarl O.: *See*—
Wolf, Elmar, 4,269,020, Cl. 56-295.000.

Wolfersberger, Martha H.: *See*—
Seidel, Michael; Weir, W. David; and Wolfersberger, Martha H., 4,269,829, Cl. 424-211.000.

Wolfgang, Walter, to Georg Fischer Aktiengesellschaft. Centrifugal blasting machine for large workpieces. 4,269,003, Cl. 51-421.000.

Wollensak, John C.: *See*—
Bartleson, John D.; and Wollensak, John C., 4,269,720, Cl. 252-50.000.

Wood, Glenn P.: *See*—
Mason, Leslie F. A.; Kitzing, Rainer; Whitear, Brian R. D.; Long, William E.; Wood, Glenn P.; and Reeves, David L. R., 4,269,928, Cl. 430-239.000.

Wood-Slimp GmbH: *See*—
Bechgaard, Carl C.; and Dulat, Joseph, 4,269,875, Cl. 427-291.000.

Woodcock, Douglas G., to Pickering Blackburn Limited. Knife block for a tufting machine. 4,269,126, Cl. 112-79.00R.

Woodhouse, Geoffrey D.: *See*—
Mattson, George B.; and Woodhouse, Geoffrey D., 4,269,027, Cl. 60-39.040.

Woods, Martin E.; and Chang, Daniel M., to B. F. Goodrich Company, The. Process for producing elastomeric particles free of agglomeration. 4,269,740, Cl. 260-4.00R.

Woods, Quentin T.; Becker, Paul H.; and Gerverdinck, William D., to FMC Corporation. Apparatus for packaging articles in a wire-bound box assembly. 4,269,015, Cl. 53-526.000.

Worley, Arthur C.; and Basile, Richard J., to Exxon Research & Engineering Company. Stack damper valve. 4,269,166, Cl. 126-285.00R.

Worstmann, Wolfgang: *See*—
Treiber, Hans J.; Lenke, Dieter; and Worstmann, Wolfgang, 4,269,833, Cl. 424-244.000.

Worth, Daniel L.; and Freeman, Ernest A., Jr., to Riegel Textile Corporation. Buffered non-formaldehyde durable press textile treatment. 4,269,602, Cl. 8-116.400.

Worth, Daniel L., to Riegel Textile Corporation. Non-formaldehyde durable press textile treatment. 4,269,603, Cl. 8-116.400.

Worthington, Paul A.; and Shephard, Margaret C., to Imperial Chemical Industries Limited. Triazole and imidazole compounds and their use as fungicides and plant growth regulating agents. 4,269,845, Cl. 424-269.000.

Wright, Charles W., to Scentex Corporation. Drive mechanism for a high speed film transport and the like. 4,269,292, Cl. 192-33.00R.

Wright, Dolph D., to General Motors Corporation. Compression molding press with hydraulic controls. 4,269,580, Cl. 425-150.000.

Wright, Oliver D. Undershot current motor. 4,270,056, Cl. 290-54.000.

Wright, William W., to Guardian Electric Manufacturing Company. Bistable control switch. 4,270,108, Cl. 335-188.000.

Wrobel, Joseph J.: *See*—
Houle, Conrad G.; Howe, Dennis G.; Thomas, Harold T.; Wrobel, Joseph J.; and Fike, Bruce G., deceased, 4,270,130, Cl. 346-77.00E.

Wrotny, Walter A.; and McIntosh, James D., to Mitchell Industries, Inc. Oven hinge. 4,269,165, Cl. 126-191.000.

Wu, Philip T.: *See*—
Brossard, Michael E.; Heuer, Dale A.; and Wu, Philip T., 4,270,189, Cl. 365-205.000.

Wu, Yulin: *See*—
Coltrin, Michael E.; and Wu, Yulin, 4,269,734, Cl. 252-430.000.

Wycheck, Thomas H.: *See*—
Shaffer, Howard R.; and Wycheck, Thomas H., 4,269,472, Cl. 339-223.00R.

Wyman, Kenneth R.; and Gallagher, Gerard A., to Contraves Goerz Corporation. Short circuit protection for switching type power processors. 4,270,164, Cl. 363-56.000.

Wyrepak Industries, Inc.: *See*—
Kovaleski, Joseph J., 4,269,371, Cl. 242-118.600.

Wysocki, Carl G., to Standard Oil Company. Recovery of acrylic acid by reversal of acrylic acid/water relative volatility. 4,269,666, Cl. 203-15.000.

Xerox Corporation: *See*—
Hamlin, Thomas J., 4,269,406, Cl. 271-108.000.
Johnson, Richard L., 4,269,137, Cl. 118-50.100.
Levinson, Leo; and Rempel, William D., 4,269,522, Cl. 400-616.100.
Lu, Chin H.; and Erhardt, Peter F., 4,269,922, Cl. 430-126.000.
Webb, John L., 4,269,404, Cl. 271-42.000.

Yabune, Hideo; and Ikemoto, Yoshiyuki, to Daicel Ltd. Process for producing cellulose diacetate having improved resistance to delustering phenomenon in hot water. 4,269,972, Cl. 536-71.000.

Yagi, Michio: *See*—
Shiozawa, Kazuo; Yagi, Michio; Suzuki, Kijiro; Aratame, Kazuhisa; Shimokawa, Ryushi; and Ishihara, Haruji, 4,269,494, Cl. 354-60.00L.

Yaguchi, Kunihide; Takaiwa, Masakazu; and Aoki, Minoru, to Kureha Kagaku Kogyo Kabushiki Kaisha. Scrubber for removal of sulfur dioxide from exhaust gas. 4,269,806, Cl. 422-171.000.

Yamada, Hideaki; Shimizu, Sakayu; and Tani, Yoshiki, to Amano Pharmaceutical Co. Ltd. Process for preparing acyl-CoA synthetase LCF-18. 4,269,942, Cl. 435-193.000.

Yamagishi, Frederick G., to Hughes Aircraft Company. Surface passivated alkali halide infrared windows. 4,269,896, Cl. 428-411.000.

Yamagishi, Michio; Kawashima, Akira; Mizutani, Taku; Hara, Hiroshi; Mizoue, Kazutoshi; Omura, Sadafumi; Seto, Haruo; and Otake, Noboru, to Taisho Pharmaceutical Co., Ltd. Antibiotic TM-531. 4,269,971, Cl. 536-17.00R.

Yamaguchi, Nobuo: *See*—
Kishino, Takao; Kawasaki, Kishio; and Yamaguchi, Nobuo, 4,270,068, Cl. 313-497.000.

Yamaguchi, Takeyoshi. Cigarette filter. 4,269,204, Cl. 131-341.000.

Yamamoto, Hitoshi: *See*—
Sato, Masanori; Wakabayashi, Hiroharu; Ejiri, Yoshihiro; and Yamamoto, Hitoshi, 4,270,029, Cl. 179-175.31R.

Yamamoto, Morio. Slurry dehydrating apparatus. 4,269,719, Cl. 210-803.000.

Yamaoka, Hidenori: *See*—
Saito, Tutomu; Yamazoe, Hiroshi; and Yamaoka, Hidenori, 4,269,391, Cl. 251-315.000.

Yamasaki, Tetsuro: *See*—
Naito, Takayuki; Nakagawa, Susumu; Yamasaki, Tetsuro; Okita, Taka-aki; and Yamashita, Haruhiro, 4,269,839, Cl. 424-253.000.

Yamashita, Haruhiro: *See*—
Naito, Takayuki; Nakagawa, Susumu; Yamasaki, Tetsuro; Okita, Taka-aki; and Yamashita, Haruhiro, 4,269,839, Cl. 424-253.000.

Yamashita, Nobuo; and Maeda, Miwako, to Olympus Optical Co., Ltd. Method for focusing an objective lens of endoscope. 4,269,485, Cl. 350-469.000.

Yamashita, Shuzo; Kawai, Syuji; Tanii, Hirokuni; and Takakura, Koichi, to Kuraray Co., Ltd. Ethylene-vinyl alcohol copolymer membrane and a method for producing the same. 4,269,713, Cl. 210-500.200.

Yamauchi, Takashi: *See*—
Osa, Tetsuo; Fujihira, Masamichi; Matsue, Tomokazu; and Yamauchi, Takashi, 4,269,674, Cl. 204-81.000.

Yamazoe, Hiroshi: *See*—
Saito, Tutomu; Yamazoe, Hiroshi; and Yamaoka, Hidenori, 4,269,391, Cl. 251-315.000.

Yancey, Paul J., to Allied Chemical Corporation. Method for growing crystalline materials. 4,269,652, Cl. 156-607.000.

Yano, Makoto; Shimada, Kiyoo; Shibatani, Kyoichiro; and Makimoto, Tsutomu, to Kuraray Co., Ltd.; and Matsuo, Tadayuki. Reference electrode of insulated gate field effect transistor. 4,269,682, Cl. 204-195.00M.

Yasuhiro, Nishitani: *See*—
Mitsuru, Yoshioka; Teruji, Tsuji; Yasuhiro, Nishitani; and Wataru, Nagata, 4,269,773, Cl. 260-245.400.

Yeh, Pochi A.; and Tracy, John M., to Rockwell International Corporation. Multiple-cavity electro-optic tunable filter. 4,269,481, Cl. 350-356.000.

Yli-Kovero, Tapio: *See*—
Jarvenkyla, Juhani; and Yli-Kovero, Tapio, 4,269,435, Cl. 280-814.000.

Yokozeki, Shinichi: *See*—
Yoshino, Toshikazu; Arai, Yasuyuki; Tsukagoshi, Tsunehiro; and Yokozeki, Shinichi, 4,269,416, Cl. 369-256.000.

Yonekubo, Ken: *See*—
Sawamura, Ichiro; Miyazaki, Kensaku; and Yonekubo, Ken, 4,269,517, Cl. 356-432.000.

Yoshida Kogyo K.K.: *See*—
Fukuroi, Takeo, 4,268,939, Cl. 24-205.15R.
Nogai, Akira, 4,269,588, Cl. 425-545.000.

Yoshino, Toshikazu; Arai, Yasuyuki; Tsukagoshi, Tsunehiro; and Yokozeki, Shinichi, to Pioneer Electronic Corporation. Head shell for record player tonearms. 4,269,416, Cl. 369-256.000.

Yoshioka, Teruhiko; Matsuzawa, Hideo; Okada, Kazuya; and Ikeda, Minoru, to Mitsubishi Rayon Co., Ltd. Method for removing chromium ions from aqueous solutions of organic acids. 4,269,705, Cl. 562-600.000.

Young, Dean A., to Union Oil Company of California. Process for selectively producing para-xylene. 4,270,017, Cl. 585-437.000.

Young, Harry E., to Container Corporation of America. Triangular carrying container. 4,269,348, Cl. 229-52.00B.

Young, John M., to American Optical Corporation. Spectacle lens insert for aphakic refraction. 4,269,487, Cl. 351-58.000.

Young, John S., to GTE Automatic Electric Laboratories Incorporated. Digitally activated ringing circuit for generation of AC voltages. 4,270,028, Cl. 179-84.00R.

Young, Peter L.: *See*—
Borrelli, Nicholas F.; and Young, Peter L., 4,269,934, Cl. 430-296.000.

Younger, Philip G. Liquid treating and distillation apparatus. 4,269,664, Cl. 202-185.00A.

Yukimachi, Katsurou; and Katayama, Kouichi, to Osaka Gas Kabushiki Kaisha. Cooling and heating system utilizing solar heat. 4,269,263, Cl. 165-29.000.

Zable, Jack L.: *See*—
Lee, Ho C.; Rickenbach, David H.; and Zable, Jack L., 4,269,117, Cl. 101-93.020.

Zabler, Erich: *See*—
Handtmann, Dieter; Rau, Helmut; and Zabler, Erich, 4,269,069, Cl. 73-705.000.

Zachoval, Jaromir: *See*—
Kalal, Jaroslav; Bednar, Bohumil; Zachoval, Jaromir; Petr, Jiri; Pelcbauer, Zdenek; and Svec, Frantisek, 4,269,962, Cl. 526-273.000.

Zaidan Hojin Handotai Kenkyu Shinkokai: *See*—
Nishizawa, Jun-ichi; and Ohmi, Tadahiro, 4,270,059, Cl. 307-446.000.

Zamek, Otto S.; Pauze, Denis R.; and Jablonski, Richard J., to General Electric Company. Polyester imide wire enamels. 4,269,752, Cl. 260-31.40R.

Zancaner, Alberto, to Filos S.a.s. Di Zancaner Alberto & Sorella. Flexible hinge for resiliently connecting the arms to the front portion of spectacles. 4,269,488, Cl. 351-113.000.

Zannucci, Joseph S., to Eastman Kodak Company. Stabilized cellulose ester compositions. 4,269,629, Cl. 106-176.000.

Zauner, Dale P.: *See*—
Menzel, S. W. O.; Mock, Donald E.; Mominee, David E.; Vance, Gilbert W.; and Zauner, Dale P., 4,269,357, Cl. 239-272.000.

Zaveri, Pradhumankumar S., to General Electric Company. Open-circuit shunt-regulated high-voltage circuit. 4,270,082, Cl. 323-248.000.

Zboralski, Jon A.; Tringali, Richard C.; and Grow, Harry N., to American Hospital Supply Corporation. Filter assembly. 4,269,615, Cl. 55-480.000.

Zecher, Wilfried: *See*—
Lewalter, Jurgen; Rottmaier, Ludwig; Merten, Rudolf; Zecher, Wilfried; Dunwald, Willi; and Schulte, Bernhard, 4,269,750, Cl. 260-30.200.

Zeibig, Anton, to Rosenthal Technik AG. Joint endoprosthesis. 4,268,919, Cl. 3-1.910.

Zeiher, Erich: *See*—
Brede, Uwe; Penner, Horst; and Zeiher, Erich, 4,269,120, Cl. 102-202.000.

Zeitzschel, Gunter: *See*—
Neuenfeldt, Walter; Siegert, Heiner; and Zeitzschel, Gunter, 4,269,660, Cl. 176-30.000.

Zema, Paul M.: *See*—
Vanderspurt, Thomas H.; and Zema, Paul M., 4,269,781, Cl. 260-410.90R.

Zenith Radio Corporation: *See*—
Smirl, Richard A., 4,270,218, Cl. 455-176.000.

Zhestkov, Vladimir M.; Tsypin, Vladimir M.; Grzhebin, Mikhail Z.; Kaminsky, Vadim A.; and Mazepov, Vitaly G. Cooling system of self-propelled floating crane engines. 4,269,599, Cl. 440-88.000.

Zick, Gregory L., to Cordis Corporation. Apparatus for oxygen partial pressure measurement. 4,269,684, Cl. 204-195.00R.

Ziegelbein, Paul J.; Dawson, Sylvan L.; and Erickson, Gerald A., to Rockwell International Corporation. Variable rate digital controller for a frequency synthesizer. 4,270,117, Cl. 340-168.00B.

Ziegler, Robert J. Garage door and safety guard therefor. 4,269,253, Cl. 160-201.000.

Zimmermann, Ulrich; and Pilwat, Gunter, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Physiological preparation containing loaded cells in suspension and a magnetic agent for local concentration thereof in a living body. 4,269,826, Cl. 424-101.000.

Zoecon Corporation: *See*—
Henrick, Clive A., 4,269,981, Cl. 546-291.000.

Zollinger, Hans-Rudolf, to H. A. Schlatter AG. Device for welding together two bars on their front sides. 4,270,036, Cl. 219-53.000.

Zolnerovich, Walter, Jr.: *See*—
Rapp, Kenneth L.; and Zolnerovich, Walter, Jr., 4,269,368, Cl. 242-42.000.

Zornes, David R., to Phillips Petroleum Company. Petroleum sulfonation. 4,269,789, Cl. 260-505.00P.

Zupack-Gesellschaft mbH: *See*—
Kopp, Josef; Huther, Ernst; and Bohlander, Ernst, 4,269,016, Cl. 53-546.000.

Zurfluh, Rene: *See*—
Dorn, Silvia; Pfiffner, Albert; and Zurfluh, Rene, 4,270,009, Cl. 568-670.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF MAY, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Akers, Edward G. Safety cap and container. Re. 30,625, Cl. 215-211.000.

Austin Powder Company: *See—*
Calder, Brooke J., Jr.; Childs, David L.; Prescott, Roger N.; and Lyons, Donald W., Re. 30,621, Cl. 102-313.000.

Bagshawe, Kenneth D.; and Kemble, James E., to Picker Corporation. Apparatus for performing chemical and biological analysis. Re. 30,627, Cl. 23-230.00R.

Calder, Brooke J., Jr.; Childs, David L.; Prescott, Roger N.; and Lyons, Donald W., to Austin Powder Company. Carrier for explosive primer and method of using same. Re. 30,621, Cl. 102-313.000.

Childs, David L.: *See—*
Calder, Brooke J., Jr.; Childs, David L.; Prescott, Roger N.; and Lyons, Donald W., Re. 30,621, Cl. 102-313.000.

Eldon Industries, Inc.: *See—*
Soulakis, George; and Mandala, Charles G., Re. 30,624, Cl. 206-45.130.

Gonnella, Sebastian: *See—*
Kaplan, Richard B.; and Gonnella, Sebastian, Re. 30,626, Cl. 401-215.000.

Hogan, Gerard T.: *See—*
Schulz, William J.; Pecoraro, Ralph R.; and Hogan, Gerard T., Re. 30,623, Cl. 165-48.00R.

Kaneko, Masayoshi: *See—*
Tokuno, Masateru; Matsuura, Masayuki; Shinmura, Noboru; and Kaneko, Masayoshi, Re. 30,628, Cl. 318-600.000.

Kaplan, Richard B.; and Gonnella, Sebastian, to Ultramet of Pacoima. Spheres obtained by vapor deposition for use in ball point pens. Re. 30,626, Cl. 401-215.000.

Kemble, James E.: *See—*
Bagshawe, Kenneth D.; and Kemble, James E., Re. 30,627, Cl. 23-230.00R.

Lyons, Donald W.: *See—*
Calder, Brooke J., Jr.; Childs, David L.; Prescott, Roger N.; and Lyons, Donald W., Re. 30,621, Cl. 102-313.000.

Mandala, Charles G.: *See—*
Soulakis, George; and Mandala, Charles G., Re. 30,624, Cl. 206-45.130.

Matsuura, Masayuki: *See—*
Tokuno, Masateru; Matsuura, Masayuki; Shinmura, Noboru; and Kaneko, Masayoshi, Re. 30,628, Cl. 318-600.000.

Nippon Riraiansu Kabushiki Kaisha: *See—*
Tokuno, Masateru; Matsuura, Masayuki; Shinmura, Noboru; and Kaneko, Masayoshi, Re. 30,628, Cl. 318-600.000.

Pecoraro, Ralph R.: *See—*
Schulz, William J.; Pecoraro, Ralph R.; and Hogan, Gerard T., Re. 30,623, Cl. 165-48.00R.

Picker Corporation: *See—*
Bagshawe, Kenneth D.; and Kemble, James E., Re. 30,627, Cl. 23-230.00R.

Prescott, Roger N.: *See—*
Calder, Brooke J., Jr.; Childs, David L.; Prescott, Roger N.; and Lyons, Donald W., Re. 30,621, Cl. 102-313.000.

Regueiro, Jose F., to Teledyne Industries, Inc. Fuel metering apparatus for a carburetor. Re. 30,622, Cl. 123-523.000.

Rengo Kabushiki Kaisha (Rengo Co., Ltd.): *See—*
Tokuno, Masateru; Matsuura, Masayuki; Shinmura, Noboru; and Kaneko, Masayoshi, Re. 30,628, Cl. 318-600.000.

Schulz, William J.; Pecoraro, Ralph R.; and Hogan, Gerard T., to UOP Inc. Apparatus for selectively heating an individual food item in a refrigerated environment. Re. 30,623, Cl. 165-48.00R.

Shinmura, Noboru: *See—*
Tokuno, Masateru; Matsuura, Masayuki; Shinmura, Noboru; and Kaneko, Masayoshi, Re. 30,628, Cl. 318-600.000.

Soulakis, George; and Mandala, Charles G., to Eldon Industries, Inc. Container-card file structure. Re. 30,624, Cl. 206-45.130.

Teledyne Industries, Inc.: *See—*
Regueiro, Jose F., Re. 30,622, Cl. 123-523.000.

Tokuno, Masateru; Matsuura, Masayuki; Shinmura, Noboru; and Kaneko, Masayoshi, to Rengo Kabushiki Kaisha (Rengo Co., Ltd.); and Nippon Riraiansu Kabushiki Kaisha. Web cutting control system. Re. 30,628, Cl. 318-600.000.

Ultramet of Pacoima: *See—*
Kaplan, Richard B.; and Gonnella, Sebastian, Re. 30,626, Cl. 401-215.000.

UOP Inc.: *See—*
Schulz, William J.; Pecoraro, Ralph R.; and Hogan, Gerard T., Re. 30,623, Cl. 165-48.00R.

LIST OF DESIGN PATENTEES

Ackeret, Peter, to IDN Inventions and Development of Novelties AG. Container for tape cassettes. 259,303, 5-26-81, Cl. D3-35.000.

Adams, Mark H., III; and Flesher, Davidjon. Kite. 259,352, 5-26-81, Cl. D21-88.000.

Automatic Devices Company: *See—*
Stine, James G., 259,330, Cl. D8-377.000.

Ball, Bryan. Boot and shoe holder. 259,304, 5-26-81, Cl. D3-36.000.

Bally Manufacturing Corporation: *See—*
Stulik, Edward L.; and Pelly, Charles W., 259,350, Cl. D21-7.000.

Barbour, Robert G. Boat anchor davit. 259,329, 5-26-81, Cl. D8-356.000.

Bestop Manufacturing Company: *See—*
Stengel, James J., 259,340, Cl. D12-156.000.

Blandy, Robert A. Cribbage board. 259,337, 5-26-81, Cl. D10-46.100.

Bosch-Siemens Hasugerate GmbH: *See—*
Reichl, Ernst, 259,363, Cl. D24-62.000.

Briggs, Vera. Eyeshield for chemical treatment of hair. 259,295, 5-26-81, Cl. D2-234.000.

Brown Jordan Company: *See—*
Colby, Donald B., 259,307, Cl. D6-37.000.

Bunger, Richard E. Flume interlocking platform panel for animal confinement pens. 259,366, 5-26-81, Cl. D30-2.000.

Canon Kabushiki Kaisha: *See—*
Hirata, Takashi; and Hirose, Kunio, 259,347, Cl. D18-1.000.
Hirata, Takashi; and Odagawa, Kazuyoshi, 259,349, Cl. D18-7.000.
Sakai, Masaaki; and Fushimoto, Hideo, 259,348, Cl. D18-2.000.

Cardinal American Corporation: *See—*
Sroub, Joseph W., 259,308, Cl. D6-52.000.

Carey, Michael J. Boot appliance. 259,297, 5-26-81, Cl. D2-317.000.

Chamberlain, Edward; Leon, Nicholas M.; and Sharp, Michael H., to International Business Machines Corporation. Cathode ray tube display device. 259,343, 5-26-81, Cl. D14-45.000.

Charbonneau, Robert R. Combined shipping and packaging envelope for a potted plant. 259,333, 5-26-81, Cl. D9-306.000.

Ciuffetti, Salvatore D., to Product Development Associates. Measuring dispenser for powdered or granular materials. 259,319, 5-26-81, Cl. D7-50.000.

Clover Mfg. Co. Ltd.: *See—*
Okada, Hidekazu, 259,325, Cl. D8-57.000.

Colby, Donald B., to Brown Jordan Company. Sun bench. 259,307, 5-26-81, Cl. D6-37.000.

Cole, William A.: *See—*
Ford, Allan L.; and Cole, William A., 259,315, Cl. D6-157.000.

Courtney Davis, Inc.: *See—*
Davis, P. Lynn, 259,302, Cl. D3-26.000.

Covey, Laird F., to Stanley Works, The. Handle for compass saw. 259,328, 5-26-81, Cl. D8-97.000.

Cowart, J. Wayne; and Roberts, Wayne J., to Roberts, Margaret, by said J. Wayne Cowart. Boot installation and removal device. 259,301, 5-26-81, Cl. D2-378.200.

Crowe, Douglas M., to Smith & Stone Limited. Toilet paper holder. 259,310, 5-26-81, Cl. D6-97.000.

Davis, P. Lynn, to Courtney Davis, Inc. Portable hand weaving loom. 259,302, 5-26-81, Cl. D3-26.000.

DeBoer, James H. Gameboard. 259,351, 5-26-81, Cl. D21-20.000.

DeHaven, William M., to Harrelson Rubber Company. Sealing disc for tire retreading. 259,346, 5-26-81, Cl. D15-199.000.

Derrington, Joseph B. Tasseled clinging game ball. 259,354, 5-26-81, Cl. D21-203.000.

Dulude, Charles R. Gun target. 259,357, 5-26-81, Cl. D22-15.000.

Emmert Manufacturing Company: *See—*
Talbot, Tully W., 259,367, Cl. D30-42.000.

Envall, Bjorn E. A.; and Svanback, Ulf K., to Saab-Scania AB. Wheel. 259,342, 5-26-81, Cl. D12-209.000.

Famolare, Inc.: *See—*
Famolare, Joseph P., Jr., 259,298, Cl. D2-322.000.
Famolare, Joseph P., Jr., to Famolare, Inc. Shoe sole. 259,298, 5-26-81, Cl. D2-322.000.
Ferretti, Bruno, to Martin Yale Industries, Inc. Combined pool and sandbox. 259,356, 5-26-81, Cl. D21-252.000.
Flesher, Davidjon: *See—*
Adams, Mark H., III; and Flesher, Davidjon, 259,352, Cl. D21-88.000.
Ford, Allan L.; and Cole, William A., to Reborn Products Co., Inc. Multi-unit belt display fixture. 259,315, 5-26-81, Cl. D6-157.000.
Fratelli Saporiti: *See—*
Offredi, Giovanni, 259,316, Cl. D6-159.000.
Friedman, Ira, to Rowe Furniture Corporation. Seat. 259,309, 5-26-81, Cl. D6-62.000.
Fushimoto, Hideo: *See—*
Sakai, Masaaki; and Fushimoto, Hideo, 259,348, Cl. D18-2.000.
Galvins, Zigurds. Mat for beverage containers. 259,323, 5-26-81, Cl. D7-188.000.
Gardisette International AG: *See—*
Stocker, Hans, 259,368, Cl. D47-6.00E.
Gillespie, Richard L., to Wham-O Mfg. Co. Combined packaging container and target for an air gun. 259,335, 5-26-81, Cl. D9-337.000.
Gilmore, Gerald M. Modular shelving. 259,317, 5-26-81, Cl. D6-186.000.
Grossman, M. Gary: *See—*
Newman, Albert L.; and Grossman, M. Gary, 259,345, Cl. D15-75.000.
Hanaford, Donald E. Chair back. 259,318, 5-26-81, Cl. D6-197.000.
Handelsbolaget Nordlunds Karosseriverkstad, Sven & Anna-Stina Nordlund: *See—*
Nordlund, Sven P., 259,311, Cl. D6-125.000.
Nordlund, Sven P., 259,312, Cl. D6-125.000.
Nordlund, Sven P., 259,313, Cl. D6-125.000.
Nordlund, Sven P., 259,314, Cl. D6-125.000.
Harrelson Rubber Company: *See—*
DeHaven, William M., 259,346, Cl. D15-199.000.
Hertel, Terry J. Heated tip for use with a heating tool or the like. 259,324, 5-26-81, Cl. D8-30.000.
Hirata, Takashi; and Hirose, Kunio, to Canon Kabushiki Kaisha. Typewriter. 259,347, 5-26-81, Cl. D18-1.000.
Hirata, Takashi; and Odagawa, Kazuyoshi, to Canon Kabushiki Kaisha. Desk top electronic calculator. 259,349, 5-26-81, Cl. D18-7.000.
Hirose, Kunio: *See—*
Hirata, Takashi; and Hirose, Kunio, 259,347, Cl. D18-1.000.
IDN Inventions and Development of Novelties AG: *See—*
Ackeret, Peter, 259,303, Cl. D3-35.000.
International Business Machines Corporation: *See—*
Chamberlain, Edward; Leon, Nicholas M.; and Sharp, Michael H., 259,343, Cl. D14-45.000.
J. L. Prescott Co.: *See—*
Saenz, Henry, 259,331, Cl. D9-404.000.
Jones, William H. Minnow dipper. 259,358, 5-26-81, Cl. D22-22.000.
Jozsa, Janos. Glueing jig for production of model railway switch points. 259,326, 5-26-81, Cl. D8-71.000.
King-Seeley Thermos Co.: *See—*
Tarozzi, Richard A., 259,320, Cl. D7-61.000.
Knackstedt, Harold A. Therapy table. 259,361, 5-26-81, Cl. D24-3.000.
Kneipp, Clifford J.: *See—*
Newman, Albert L.; and Kneipp, Clifford J., 259,344, Cl. D15-72.000.
Landmann Limited: *See—*
Lau, Philip W. L., 259,322, Cl. D7-129.000.
Lau, Philip W. L., to Landmann Limited. Rotator primarily for a barbecue spit including an electrical adaptor therefor. 259,322, 5-26-81, Cl. D7-129.000.
Leon, Nicholas M.: *See—*
Chamberlain, Edward; Leon, Nicholas M.; and Sharp, Michael H., 259,343, Cl. D14-45.000.
Lewis, Richard P., to Syntex (U.S.A.) Inc. Dental bur wrench tool. 259,362, 5-26-81, Cl. D24-10.000.
Licastro, Joseph, II. Portable easel, seat and carrying case combination. 259,306, 5-26-81, Cl. D6-17.000.
MacGregor, Mervyn S. Fluid pump. 259,360, 5-26-81, Cl. D23-14.000.
Martin Yale Industries, Inc.: *See—*
Ferretti, Bruno, 259,356, Cl. D21-252.000.
Meyer, Kerry. Child's boot. 259,296, 5-26-81, Cl. D2-273.000.
Myojo, Seiji;, to Shimano Kogyo Kabushiki Kaisha. Fishing reel. 259,359, 5-26-81, Cl. D22-25.000.
Newman, Albert L.; and Kneipp, Clifford J., to Singer Company, The. Sewing machine bed cover. 259,344, 5-26-81, Cl. D15-72.000.
Newman, Albert L.; and Grossman, M. Gary, to Singer Company, The. Carrying case cover for a sewing machine. 259,345, 5-26-81, Cl. D15-75.000.
Nordlund, Sven P., to Handelsbolaget Nordlunds Karosseriverkstad, Sven & Anna-Stina Nordlund. Tool holder. 259,311, 5-26-81, Cl. D6-125.000.
Nordlund, Sven P., to Handelsbolaget Nordlunds Karosseriverkstad, Sven & Anna-Stina Nordlund. Tool holder. 259,312, 5-26-81, Cl. D6-125.000.
Nordlund, Sven P., to Handelsbolaget Nordlunds Karosseriverkstad, Sven & Anna-Stina Nordlund. Tool holder. 259,313, 5-26-81, Cl. D6-125.000.
Nordlund, Sven P., to Handelsbolaget Nordlunds Karosseriverkstad, Sven & Anna-Stina Nordlund. Tool holder. 259,314, 5-26-81, Cl. D6-125.000.
Odagawa, Kazuyoshi: *See—*
Hirata, Takashi; and Odagawa, Kazuyoshi, 259,349, Cl. D18-7.000.
Offredi, Giovanni, to Fratelli Saporiti. Cabinet. 259,316, 5-26-81, Cl. D6-159.000.
Okada, Hidekazu, to Clover Mfg. Co. Ltd. Scissors. 259,325, 5-26-81, Cl. D8-57.000.
Paitson, Lloyd. Seismic cable loçator. 259,336, 5-26-81, Cl. D10-46.000.
Pelly, Charles W.: *See—*
Stulik, Edward L.; and Pelly, Charles W., 259,350, Cl. D21-7.000.
Petrovic, Branislav. Combined dental floss holder and tooth pick. 259,365, 5-26-81, Cl. D28-64.000.
Poth, Carl. Extruded aluminum channel. 259,364, 5-26-81, Cl. D25-74.000.
Product Development Associates: *See—*
Ciuffetti, Salvatore D., 259,319, Cl. D7-50.000.
Reborn Products Co., Inc.: *See—*
Ford, Allan L.; and Cole, William A., 259,315, Cl. D6-157.000.
Reichl, Ernst, to Bosch-Siemens Hasugerate GmbH. Pocket inhalator with ultrasonic sprayer or atomizer. 259,363, 5-26-81, Cl. D24-62.000.
Roberts, Margaret: *See—*
Cowart, J. Wayne; and Roberts, Wayne J. (said J. Wayne Cowart assors. to), 259,301, Cl. D2-378.200.
Roberts, Wayne J.: *See—*
Cowart, J. Wayne; and Roberts, Wayne J., 259,301, Cl. D2-378.200.
Rowe Furniture Corporation: *See—*
Friedman, Ira, 259,309, Cl. D6-62.000.
Saab-Scania AB: *See—*
Envall, Bjorn E. A.; and Svanback, Ulf K., 259,342, Cl. D12-209.000.
Saenz, Henry, to J. L. Prescott Co. Bottle. 259,331, 5-26-81, Cl. D9-404.000.
Sakai, Masaaki; and Fushimoto, Hideo, to Canon Kabushiki Kaisha. Combined desk top electronic calculator and clock. 259,348, 5-26-81, Cl. D18-2.000.
Sharp, Michael H.: *See—*
Chamberlain, Edward; Leon, Nicholas M.; and Sharp, Michael H., 259,343, Cl. D14-45.000.
Shimano Kogyo Kabushiki Kaisha: *See—*
Myojo, Seiji;, 259,359, Cl. D22-25.000.
Singer Company, The: *See—*
Newman, Albert L.; and Kneipp, Clifford J., 259,344, Cl. D15-72.000.
Newman, Albert L.; and Grossman, M. Gary, 259,345, Cl. D15-75.000.
Slemmons, John W. Novelty toy coffin. 259,353, 5-26-81, Cl. D21-109.000.
Sloane, Irving. Woodworking clamp. 259,327, 5-26-81, Cl. D8-72.000.
Smith & Stone Limited: *See—*
Crowe, Douglas M., 259,310, Cl. D6-97.000.
Sparger, Haywood M. Knife rack. 259,321, 5-26-81, Cl. D7-74.000.
Splendora, Joseph. Transparent monument. 259,369, 5-26-81, Cl. D99-24.000.
Sroub, Joseph W., to Cardinal American Corporation. Glider. 259,308, 5-26-81, Cl. D6-52.000.
Stanley Works, The: *See—*
Covey, Laird F., 259,328, Cl. D8-97.000.
Stengel, James J., to Bestop Manufacturing Company. Open side top for jeeps. 259,340, 5-26-81, Cl. D12-156.000.
Stine, James G., to Automatic Devices Company. Door mounting carrier for a track supported transaction security enclosure door. 259,330, 5-26-81, Cl. D8-377.000.
Stocker, Hans, to Gardisette International AG. Curtain material. 259,368, 5-26-81, Cl. D47-6.00E.
Stulik, Edward L.; and Pelly, Charles W., to Bally Manufacturing Corporation. Pinball game cabinet. 259,350, 5-26-81, Cl. D21-7.000.
Svanback, Ulf K.: *See—*
Envall, Bjorn E. A.; and Svanback, Ulf K., 259,342, Cl. D12-209.000.
Syntex (U.S.A.) Inc.: *See—*
Lewis, Richard P., 259,362, Cl. D24-10.000.
Sztuden, Luis. Bottle. 259,334, 5-26-81, Cl. D9-310.000.
Talbot, Tully W., to Emmert Manufacturing Company. Treadmill for animals. 259,367, 5-26-81, Cl. D30-42.000.
Tarozzi, Richard A., to King-Seeley Thermos Co. Combined food and beverage cooler. 259,320, 5-26-81, Cl. D7-61.000.
Tolbert, Okpara E., II. Non-smoking trophy. 259,338, 5-26-81, Cl. D11-133.000.
Van Winkle, Peter. Underwater hockey stick. 259,355, 5-26-81, Cl. D21-210.000.
Vickers, Sherman. Three wheeled vehicle body. 259,339, 5-26-81, Cl. D12-85.000.
Vreeken, Richard. Stocking removing tool for the handicapped or similar article. 259,299, 5-26-81, Cl. D2-378.000.
Vreeken, Richard. Stocking holder for the handicapped or similar article. 259,300, 5-26-81, Cl. D2-378.000.
Walton, Laurie. Bottle. 259,332, 5-26-81, Cl. D9-385.000.
Wang, Peter. Vehicle side molding. 259,341, 5-26-81, Cl. D12-190.000.
Wham-O Mfg. Co.: *See—*
Gillespie, Richard L., 259,335, Cl. D9-337.000.
Wu, Kuo-Chu. Tooth brush. 259,305, 5-26-81, Cl. D4-25.000.

LIST OF PLANT PATENTEES

Armstrong Nurseries, Inc.: *See—*
Swim, Herbert C.; and Ellis, Arnold W., 4,723, Cl. 26.000.

Bailey, Catherine H.: *See—*
Shay, J. Ralph, deceased; Williams, Edwin B.; Dayton, Daniel F.; Hough, L. Fredric; Bailey, Catherine H.; Emerson, Frank H.; and Janick, Jules, 4,724, Cl. 34.000.

Dayton, Daniel F.: *See—*
Shay, J. Ralph, deceased; Williams, Edwin B.; Dayton, Daniel F.; Hough, L. Fredric; Bailey, Catherine H.; Emerson, Frank H.; and Janick, Jules, 4,724, Cl. 34.000.

Ellis, Arnold W.: *See—*
Swim, Herbert C.; and Ellis, Arnold W., 4,723, Cl. 26.000.

Emerson, Frank H.: *See—*
Shay, J. Ralph, deceased; Williams, Edwin B.; Dayton, Daniel F.; Hough, L. Fredric; Bailey, Catherine H.; Emerson, Frank H.; and Janick, Jules, 4,724, Cl. 34.000.

Hough, L. Fredric: *See—*
Shay, J. Ralph, deceased; Williams, Edwin B.; Dayton, Daniel F.; Hough, L. Fredric; Bailey, Catherine H.; Emerson, Frank H.; and Janick, Jules, 4,724, Cl. 34.000.

Janick, Jules: *See—*
Shay, J. Ralph, deceased; Williams, Edwin B.; Dayton, Daniel F.; Hough, L. Fredric; Bailey, Catherine H.; Emerson, Frank H.; and Janick, Jules, 4,724, Cl. 34.000.

Mikkelsen, James C.; and Van den Berg, Cornelis P., to Mikkelsens Inc. Kalanchoe plant. 4,726, 5-26-81, Cl. 68.000.

Mikkelsen, James C.: *See—*
Van den Berg, Cornelis P.; and Mikkelsen, James C., 4,725, Cl. 68.000.
Van den Berg, Cornelis P.; and Mikkelsen, James C., 4,727, Cl. 68.000.
Van den Berg, Cornelis P.; and Mikkelsen, James C., 4,728, Cl. 68.000.

Mikkelsens Inc.: *See—*
Mikkelsen, James C.; and Van den Berg, Cornelis P., 4,726, Cl. 68.000.
Van den Berg, Cornelis P.; and Mikkelsen, James C., 4,725, Cl. 68.000.
Van den Berg, Cornelis P.; and Mikkelsen, James C., 4,727, Cl. 68.000.
Van den Berg, Cornelis P.; and Mikkelsen, James C., 4,728, Cl. 68.000.

Shay, J. Ralph, deceased (by Witters, Robert E.); Williams, Edwin B.; Dayton, Daniel F.; Hough, L. Fredric; Bailey, Catherine H.; Emerson, Frank H.; and Janick, Jules, to State of Oregon Acting by and through the State Board of Higher Education on Behalf of Oregon State University. Apple tree. 4,724, 5-26-81, Cl. 34.000.

State of Oregon Acting by and through the State Board of Higher Education on Behalf of Oregon State University: *See—*
Shay, J. Ralph, deceased; Williams, Edwin B.; Dayton, Daniel F.; Hough, L. Fredric; Bailey, Catherine H.; Emerson, Frank H.; and Janick, Jules, 4,724, Cl. 34.000.

Swim, Herbert C.; and Ellis, Arnold W., to Armstrong Nurseries, Inc. Rose plant. 4,723, 5-26-81, Cl. 26.000.

Van den Berg, Cornelis P.; and Mikkelsen, James C., to Mikkelsens Inc. Impatiens plant. 4,725, 5-26-81, Cl. 68.000.

Van den Berg, Cornelis P.; and Mikkelsen, James C., to Mikkelsens Inc. Kalanchoe plant. 4,727, 5-26-81, Cl. 68.000.

Van den Berg, Cornelis P.; and Mikkelsen, James C., to Mikkelsens Inc. Kalanchoe plant. 4,728, 5-26-81, Cl. 68.000.

Van den Berg, Cornelis P.: *See—*
Mikkelsen, James C.; and Van den Berg, Cornelis P., 4,726, Cl. 68.000.

Williams, Edwin B.: *See—*
Shay, J. Ralph, deceased; Williams, Edwin B.; Dayton, Daniel F.; Hough, L. Fredric; Bailey, Catherine H.; Emerson, Frank H.; and Janick, Jules, 4,724, Cl. 34.000.

Witters, Robert E.: *See—*
Shay, J. Ralph, deceased; Williams, Edwin B.; Dayton, Daniel F.; Hough, L. Fredric; Bailey, Catherine H.; Emerson, Frank H.; and Janick, Jules, 4,724, Cl. 34.000.

CLASSIFICATION OF PATENTS

ISSUED MAY 26, 1981

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

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458 R 4,269,786
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100 4,270,210
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200 4,269,527
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231 4,269,528
258 4,269,529

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	273	259,296		62	259,309		129	259,322		404	259,331	D18—	1	259,347		25	259,359
	317	259,297		97	259,310		188	259,323	D10—	46	259,336		2	259,348	D23—	14	259,360
	322	259,298		125	259,311	D8—	30	259,324		46.1	259,337		7	259,349	D24—	3	259,361
	378	259,299			259,312		57	259,325	D11—	133	259,338	D21—		259,350		10	259,362
		259,300			259,313		71	259,326	D12—	85	259,339		20	259,351		62	259,363
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